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The Massachusetts Medical Society

The next Annual Meeting of the Massachusetts Medical Society will be held at Plymouth, June 10 and 11, 1930

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INSULIN RESISTANCE AND BRONZE DIABETES*

BY HOWARD F. ROOT, M.D.†

SUCH great variations in the amount of insulin required to reduce hyperglycemia are at times observed that the use of the term "insulin resistance" seems justified. Nevertheless, no case of true uncomplicated diabetes in which insulin treatment has been unsuccessful in reducing the sugar of the blood or urine has been demonstrated. A definition of terms is necessary because some authors have classified certain cases as "resistant" to whom only 50 units of insulin were administered daily. Others have reported cases in which 200 or more units failed to make the urine sugar free. A temporary need for 200 to 500 units of insulin in 24 hours in the presence of such an emergency as coma in our opinion is not an instance of "resistance", although the fact is of interest in seeking an explanation for other instances of high insulin dosage. In general I have included in this discussion cases reported by their authors as requiring more insulin than the clinical character of the patient seemed to demand and especially those to whom amounts of insulin in excess of 100 units a day were taken for considerable periods without insulin reactions or without obtaining the expected effect upon the blood sugar or glycosuria.

The insulin requirement of a totally depancreatized human being is unknown. Macleod[1] gives 32 units a day as the dose for a depancreatized female dog weighing 16 pounds. Hédon's[2] dog, weight 15.4 lbs., received 20 units a day with a diet of carbohydrate 30 grams and calories 520. In proportion to weight a depancreatized man weighing 150 pounds would require between 200 and 300 units daily. One might reason, therefore, that a patient, admittedly having some functioning islets of Langerhans, who takes more than 200 units of insulin a day, must suffer in addition from some disorder of the liver, muscles or tissue cells, which either makes inaccessible the usual vacuum for glucose in these cells or prevents the withdrawal of sugar from the blood.

Cases requiring excessive doses of insulin are important in that they disclose various factors which may influence the action of insulin. The following case is reported because the apparent ineffectiveness of 1680 units of insulin daily was explained only at autopsy:

CASE No. 6247, a physician, aged 52 years, entered the Presbyterian Hospital, Chicago, Illinois, on July 12, 1923, under the care of Dr. B. W. Sippy, with the complaint of vomiting.

Present illness began in 1921 with vomiting and diarrhoea after a chicken supper. Since that time vomiting had occurred sometimes daily and sometimes at intervals of a few days, without pain and without any evident relation to the taking of food. Rarely he had had some distress in the abdomen not well localized. During four or five months he lost 25 pounds in weight. His present weight was 140 pounds.

Physical examination revealed no abnormalities except an enlargement of the liver, which was described as smooth and firm, the edge being palpable 2½ fingers' breadth below the costal margin, blood pressure 118/60: Gastro-intestinal examination by x-ray was negative.

Laboratory results: Gastric analyses done twice after Ewald meals showed no free hydrochloric acid and no blood, gross or microscopic.

Stools:—no blood by chemical test.

Red blood cells—4,880,000, white blood cells, 6,500, hemoglobin 88 per cent.

Urine—sugar 0, diacetic acid 0, albumin 0, bile 0.

On July 13, 1923, Dr. A. D. Bevan performed a laparotomy which disclosed a typically cirrhotic liver and a nodule in the head of the pancreas of the size of an English walnut.

On January 1, 1927, he entered St. Luke's Hospital, Chicago, Illinois, under the care of Dr. Joseph Miller. During the three months following his operation he had gained 30 pounds in weight and felt well until July 1926 when vomiting, loss of appetite and weight occurred. Vomitus was never bloody and stools were never clay-colored. He lost strength. In October 1926 the onset of diabetes occurred with polyuria, polydipsia and glycosuria.

The liver could be felt extending across the epigastrium and the right lobe was felt below the costal margin in the anterior axillary line. His temperature on one occasion rose to 99° otherwise temperature, pulse and respiration were normal. On January 14, 1927 the urine contained 1.3 per cent. of sugar and the blood sugar was 0.21 per cent. On January 18, he was receiving 40 units of insulin, daily.

In August, 1927, he was observed for 2 weeks in Boston, and his case was briefly described by Dr. Joslin[3]. On a diet of about 30 calories per kilogram body weight consisting of carbohydrate 78 grams, protein 60 grams and fat 123 grams, he constantly excreted from 40 to 90 grams glucose in the urine which always contained diacetic acid in spite of 100 units of insulin daily. Physical examination was negative, except for slight enlargement of the liver, blood pressure 98/62, Wassermann reaction negative in both blood and spinal fluid, bilirubin 0.4 mgm. per 100 c. c., blood sugar 0.23 to 0.30 per cent., non-protein nitrogen 33.0 milligrams per 100 c. c.

For 3 days during September 1927, he was in

*From the New England Deaconess Hospital.

†For record and address of author see "This Week's Issue," page 234.

coma and required 525 units daily. After his recovery his urine was at times sugar free and the blood sugar varied from 0.08 to 0.30 per cent. Insulin was gradually increased till October 22, when he was receiving 840 units. By October 27, he was receiving 1600 units. He died in coma on October 30, 1927, in spite of the administration of 1680 units in 24 hours.

Summary of Post-Mortem Examination.
(I am indebted to Dr. George Rukstinat for the record of the autopsy.)

Nourishment poor. Face, neck, hands, and wrists moderately tanned and freckled.
Subcutaneous fat dark yellow.

PERITONEAL CAVITY: Negative, except for adhesions on ventral surface of liver.

HEART: Moderate hypertrophy. Ten per cent. of area of thoracic aorta shows fatty change. Twenty per cent. of abdominal aorta shows fatty change. Similar amount in renal arteries. Adrenal cortex thin and dull yellow.

KIDNEYS: Essentially negative.

LUNGS: Essentially negative, except for hypostatic congestion.

SPLEEN: Slightly enlarged. Chronic peri-splenitis.

CORONARY ARTERIES: Negative.

LIVER: Firm adhesions between gall bladder and transverse colon.
Surface of liver finely granular. Cut surface dark greenish brown with occasional dark yellow areas.

BILE DUCTS: Negative.

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STOMACH: Mucosa light brown.
PROSTATE: Negative.

MICROSCOPIC FINDINGS

HEART: Yellowish pigment granules in myocardium. Hemofuscin in smooth muscles of blood vessels.

SPLEEN: Masses of yellow pigment in reticuloendothelial cells and fibroblasts.

PANCREAS: Very little actual pancreatic tissue remains. Chiefly fat and fibrous tissue. Marked pigmentation with hemosiderin and hemofuscin involving acinar cells, island cells, and duct cells. Some islands nearly normal.

LIVER: Marked periportal connective tissue increase. Focal necroses of liver. Large amounts of hemosiderin and hemofuscin in liver cells.

ADRENALS: Cells in the zona glomerulosa show heavy infiltration with hemosiderin. Small amount of lipoid material.

SUMMARY. A case of hemochromatosis with steady loss of function of the islands of Langerhans and death in coma. Although anatomic evidences of destruction of cells in the liver, heart and other tissues were marked, the interference with function was preponderantly manifest in the pancreas.

A considerable group of cases relatively refractory to insulin have been reported since the discovery of insulin. Explanation for the great variations in the amount of insulin needed is difficult to obtain because of the great variety of cases cited. However, the cases reported as having required unusual amounts of insulin may be grouped as follows:

1) RENAL GLYCOSURIA: Frank[4] reported a case with abnormal sugar formation and abnormal penetrability of the kidneys for sugar and discussed phases of insulin resistance in diabetes. He pointed out that the blood sugar is lowered by insulin in renal glycosuria and that it is only in cases with very low renal threshold that glycosuria is not diminished by insulin. He noted an analogy to insulin-resistant diabetes in the comparatively high resistance of glycosuria due to piqûre and epinephrine, and suggested that there may be combinations of non-pancreatic hyperglycemia with renal glycosuria. Umber and Rosenberg[5] concluded that all cases of "diabetes innocens", i. e., renal diabetes, are insulin refractory and suggested that failure to respond to insulin could be used as a diagnostic measure. They used the persistence of glycosuria as an evidence of refractoriness. The blood sugar was always reduced by insulin in their cases. Renal glycosuria is a distinct clinical entity and no confusion should arise if urinary analyses and blood sugar analyses are made fasting and after test meals.

2) COMPLICATING DISORDERS OF THE PITUITARY, THYROID, OR ADRENAL GLANDS:

a) The literature dealing with interrelations of the thyroid and the pancreas is too extensive for review, but Pollak[6], Rosenberg and Meyer[7], Strauss[8] and Kogan[9] have reported insulin-resistant cases and discussed the antagonism between hyperactivity of the thyroid in cases of toxic adenoma and primary hyperthyroidism and insulin. Hyperthyroidism reduces the glycogen content of the liver not only by making it hypersensitive (over-responsive) in discharging sugar but also by interfering with its glycogenetic function and so preventing the withdrawal of sugar from the blood for storage as glycogen in the liver. The increased breakdown of protein and fat associated with the high metabolism results in the diabetic in a greater formation of glucose which is metabolized with greater difficulty than glucose obtained from ingested carbohydrate. Furthermore in the diabetic whose insulin reserve is below normal, hyperthyroidism specifically depresses it still further (John)[10]. The elevation of the metabolism and the increased amount of carbohydrate to be oxidized requires additional insulin.

b) Wemyss[11], Mauriac and Aubertin[12] reported cases with pituitary disease in which large amounts of insulin were required. Falta[13] had an obese patient with a small sella turcica in whom the blood sugar rose temporarily with insulin treatment although it was substantially reduced later. Mahler and Pasterny[14] found in a case with hypophysial tumor that insulin had but slight effect on the blood sugar but did cause hydremia. It has been suggested that in cases of hypersecretion of the pituitary gland the unusual rise in blood sugar produces a demand for more insulin in order to keep the blood sugar at a more normal level. Eventually

the Islands of Langerhans prove incapable of meeting these demands and either degenerate or become functionally defective.

The relations between the pituitary gland and diabetes are many. Cushing and Davidoff[15] have found in a series of 100 acromegalics that glycosuria was present in one out of four. Eleven of forty-four autopsied cases of acromegaly died in diabetic coma and in autopsied cases of acromegaly changes in the pancreas were frequent. They point to the peculiar character of the diabetes sometimes found with acromegaly in that the glycosuria sometimes disappears as the hyperpituitarism improves. In one of their cases marked hyperglycemia and glycosuria disappeared entirely within a few months after operation upon the pituitary. Cammidge[16] noted the difficulty in balancing diet and insulin in acromegalics with diabetes and to less extent in diabetics who "although not presenting the typical clinical features of acromegaly are apparently related to it." Joslin[17] describes an acromegalic in whom the relation between diet, glycosuria, and insulin were less constant than usually seen. The antagonism between the pituitary secretion and insulin is easily shown clinically by comparing the blood sugar curves obtained after injections of insulin alone and with pituitrin, as reported by Burn[18], and Blotner and Fitz[19]. The latter suggested that in normal animals injections of pituitrin caused a mobilization of insulin so that hypoglycemia followed the early hyperglycemia. Davidoff and Cushing[20] called attention to the occurrence of hyperpituitarism and melituria in waves with marked remissions. It may be that many cases of hyperpituitarism are overlooked and this factor in insulin resistance therefore seldom noted.

In children there appears to be a closer association between the pituitary and diabetes than in adults. Children who develop diabetes are as a rule above the average in height according to White[21] and the overgrowth seems dependent upon the pituitary. With the onset of diabetes, however, growth ceases and is only resumed if insulin is used. Is the normal pituitary function dependent upon a normal secretion of insulin? Degenerative changes in the pituitary have been reported in cases of diabetes by Krauss[22] and Vernon[23]. Houssay and Magenta[24] found hypophysectomized dogs more sensitive to insulin and more easily rendered hypoglycemic than under normal conditions. A similar result was obtained by Olmsted and Logan[25] with decerebrate cats in whom without removal of the pituitary hyperglycemia developed in spite of insulin, whereas when the pituitary was also removed hyperglycemia occurred easily.

c) The well known antagonism between the secretion of the adrenal medulla, epinephrin, which is easily demonstrable by comparisons of the blood sugar curves obtained after the two, by the cure of insulin hypoglycemia by injection of adrenalin and by the occurrence of hypoglycemia in Addison's disease, is difficult to demonstrate clinically as effective in the mechanism of insulin resistance. In acromegaly it might be supposed that the apparent resistance to insulin was brought about indirectly by the effects of the disease upon the adrenals, but the changes in the adrenals involve the cortex rather than the medulla. Although it is true that many diabetic patients have a rise in blood pressure during the months following the inauguration of insulin treatment, the simultaneous improvement of weight, strength, physical activity and diet may be the responsible factor. Professor Poll[26] has shown in mice that the injection of insulin is followed by an effusion of adrenalin from the medulla—and Cannon[27] has shown that the stimulus for the recovery of the blood sugar in hypoglycemia may be associated with an increased discharge of epinephrin.

Furthermore the presence of infections seems to stimulate adrenal activity. The fact that the adrenal glands seem to be involved as are other members of the endocrine system when anyone is disturbed suggest that over-activity of adrenal medulla with consequent mobilization of sugar and increase in the blood sugar may play a part in cases of insulin resistance.

3) INFECTIONS: Acute infections such as septic processes or pneumonia usually require a large increase in the insulin dose in order to control glycosuria and acidosis. Whether the relative refractoriness is due to a toxic effect upon the pancreas with reduction in its insulin producing power, or to the presence of substances which neutralize insulin, or to a toxic effect upon the tissue cells in which insulin normally exerts its action has been much discussed. It has been suggested by Lawrence[28] and Buckley that the toxins of diphtheria neutralize insulin. Similarly when pus from a metastatic abscess or when the serum from a patient with such abscesses was mixed with insulin its effectiveness was reduced according to Depisch and Hasenohrl[29]. Minkowski[30] concluded that during the course of purulent processes insulin was destroyed by autolytic ferments circulating in the blood. Charlton[31] reported a case of diabetes refractory to insulin who after proper antisyphilitic treatment reacted normally to insulin. Usually, however, in infectious processes, fever and an elevated metabolic rate account in considerable measure for the increased insulin requirement.

4) CARDIAC COMPLICATIONS WITH DECOMPENSATION: In the presence of edema the effectiveness of insulin may be reduced. In extreme shock or the circulatory collapse of advancing coma apparently insulin may be absorbed with difficulty from under the skin. In decompensated cases a return of compensation often results in a reduction in the amount

coma and required 525 units daily. After his recovery his urine was at times sugar free and the blood sugar varied from 0.08 to 0.30 per cent. Insulin was gradually increased till October 22, when he was receiving 840 units. By October 27, he was receiving 1600 units. He died in coma on October 30, 1927, in spite of the administration of 1680 units in 24 hours.

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2) COMPLICATING DISORDERS OF THE PITUITARY, THYROID, OR ADRENAL GLANDS:

a) The literature dealing with interrelations of the thyroid and the pancreas is too extensive for review, but Pollak[6], Rosenberg and Meyer[7], Strauss[8] and Kogan[9] have reported insulin-resistant cases and discussed the antagonism between hyperactivity of the thyroid in cases of toxic adenoma and primary hyperthyroidism and insulin. Hyperthyroidism reduces the glycogen content of the liver not only by making it hypersensitive (over-responsive) in discharging sugar but also by interfering with its glycogenetic function and so preventing the withdrawal of sugar from the blood for storage as glycogen in the liver. The increased breakdown of protein and fat associated with the high metabolism results in the diabetic in a greater formation of glucose which is metabolized with greater difficulty than glucose obtained from ingested carbohydrate. Furthermore in the diabetic whose insulin reserve is below normal, hyperthyroidism specifically depresses it still further (John)[10]. The elevation of the metabolism and the increased amount of carbohydrate to be oxidized requires additional insulin.

b) Wemyss[11], Mauriac and Aubertin[12] reported cases with pituitary disease in which large amounts of insulin were required. Falta[13] had an obese patient with a small sella turcica in whom the blood sugar rose temporarily with insulin treatment although it was substantially reduced later. Mahler and Pasterny[14] found in a case with hypophysial tumor that insulin had but slight effect on the blood sugar but did cause hydremia. It has been suggested that in cases of hypersecretion of the pituitary gland the unusual rise in blood sugar produces a demand for more insulin in order to keep the blood sugar at a more normal level. Eventually

the Islands of Langerhans prove incapable of meeting these demands and either degenerate or become functionally defective.

The relations between the pituitary gland and diabetes are many. Cushing and Davidoff[15] have found in a series of 100 acromegalics that glycosuria was present in one out of four. Eleven of forty-four autopsied cases of acromegaly died in diabetic coma and in autopsied cases of acromegaly changes in the pancreas were frequent. They point to the peculiar character of the diabetes sometimes found with acromegaly in that the glycosuria sometimes disappears as the hyperpituitarism improves. In one of their cases marked hyperglycemia and glycosuria disappeared entirely within a few months after operation upon the pituitary. Cammidge[16] noted the difficulty in balancing diet and insulin in acromegalics with diabetes and to less extent in diabetics who "although not presenting the typical clinical features of acromegaly are apparently related to it." Joslin[17] describes an acromegalic in whom the relation between diet, glycosuria, and insulin were less constant than usually seen. The antagonism between the pituitary secretion and insulin is easily shown clinically by comparing the blood sugar curves obtained after injections of insulin alone and with pituitrin, as reported by Burn[18], and Blotner and Fitz[19]. The latter suggested that in normal animals injections of pituitrin caused a mobilization of insulin so that hypoglycemia followed the early hyperglycemia. Davidoff and Cushing[20] called attention to the occurrence of hyperpituitarism and melituria in waves with marked remissions. It may be that many cases of hyperpituitarism are overlooked and this factor in insulin resistance therefore seldom noted.

In children there appears to be a closer association between the pituitary and diabetes than in adults. Children who develop diabetes are as a rule above the average in height according to White[21] and the overgrowth seems dependent upon the pituitary. With the onset of diabetes, however, growth ceases and is only resumed if insulin is used. Is the normal pituitary function dependent upon a normal secretion of insulin? Degenerative changes in the pituitary have been reported in cases of diabetes by Krauss[22] and Vernon[23]. Houssay and Magenta[24] found hypophysectomized dogs more sensitive to insulin and more easily rendered hypoglycemic than under normal conditions. A similar result was obtained by Olmsted and Logan[25] with decerebrate cats in whom without removal of the pituitary hyperglycemia developed in spite of insulin, whereas when the pituitary was also removed hyperglycemia occurred easily.

c) The well known antagonism between the secretion of the adrenal medulla, epinephrin, which is easily demonstrable by comparisons of the blood sugar curves obtained after the two, by the cure of insulin hypoglycemia by injection of adrenalin and by the occurrence of hypoglycemia in Addison's disease, is difficult to demonstrate clinically as effective in the mechanism of insulin resistance. In acromegaly it might be supposed that the apparent resistance to insulin was brought about indirectly by the effects of the disease upon the adrenals, but the changes in the adrenals involve the cortex rather than the medulla. Although it is true that many diabetic patients have a rise in blood pressure during the months following the inauguration of insulin treatment, the simultaneous improvement of weight, strength, physical activity and diet may be the responsible factor. Professor Poll[26] has shown in mice that the injection of insulin is followed by an effusion of adrenalin from the medulla—and Cannon[27] has shown that the stimulus for the recovery of the blood sugar in hypoglycemia may be associated with an increased discharge of epinephrin.

Furthermore the presence of infections seems to stimulate adrenal activity. The fact that the adrenal glands seem to be involved as are other members of the endocrine system when anyone is disturbed suggest that over-activity of adrenal medulla with consequent mobilization of sugar and increase in the blood sugar may play a part in cases of insulin resistance.

3) INFECTIONS: Acute infections such as septic processes or pneumonia usually require a large increase in the insulin dose in order to control glycosuria and acidosis. Whether the relative refractoriness is due to a toxic effect upon the pancreas with reduction in its insulin producing power, or to the presence of substances which neutralize insulin, or to a toxic effect upon the tissue cells in which insulin normally exerts its action has been much discussed. It has been suggested by Lawrence[28] and Buckley that the toxins of diphtheria neutralize insulin. Similarly when pus from a metastatic abscess or when the serum from a patient with such abscesses was mixed with insulin its effectiveness was reduced according to Depisch and Hasenohrl[29]. Minkowski[30] concluded that during the course of purulent processes insulin was destroyed by autolytic ferments circulating in the blood. Charlton[31] reported a case of diabetes refractory to insulin who after proper antisyphilitic treatment reacted normally to insulin. Usually, however, in infectious processes, fever and an elevated metabolic rate account in considerable measure for the increased insulin requirement.

4) CARDIAC COMPLICATIONS WITH DECOMPENSATION: In the presence of edema the effectiveness of insulin may be reduced. In extreme shock or the circulatory collapse of advancing coma apparently insulin may be absorbed with difficulty from under the skin. In decompensated cases a return of compensation often results in a reduction in the amount

of insulin needed. Here the function of the liver is involved.

5) LESIONS OF THE SKIN: Cases of sunburn and eczema often require extra doses of insulin. Foerster[32] reported a patient with a history of hives after injections of milk. At first she was sugar free with insulin but after a week sugar and acetone were present and she became rapidly worse although insulin was increased up to 160 units in the course of four hours. She had a mild attack of hives at this time. She improved when insulin was discontinued and an oatmeal diet used. Lawrence's[33] case had acne rosacea, a condition known to be unfavorably influenced by sugar ingestion. He also had eosinophilia varying between eleven and twenty per cent.

The remarkable case of Glassberg, Somogyi and Taussig[34] was allergic at times. Three hundred units of insulin were required to reduce her blood sugar from 0.30 per cent. to 0.08 per cent. in 3 hours even when no acidosis was present. Later, however, her case was not difficult to treat.

Folin, Trimble and Newman[35], found that sugar injected intravenously in animals produced an increase in the sugar content of the skin nearly equal to that of the blood and greater than in the muscles. One wonders whether in skin disorders such a depot for sugar derived from the blood would exist. If this pathway for the discharge of sugar from the blood were blocked, would there not be greater difficulty in reducing the sugar of the blood with insulin?

6) ACIDOSIS: During extreme acidosis from 200 to 500 units of insulin may be required, yet within 48 hours after the disappearance of acidosis the patient may be sugar free with only 50 units or less a day.

7) CANCER: Malignant disease especially of the pancreas may cause notable increase in the insulin requirement. Case No. 896 was mild for years and then suddenly required during the last few months of her life from 50 to 100 units of insulin a day and at autopsy a large carcinoma of the pancreas was found. Usually cases of diabetes with intercurrent carcinoma of the pancreas require considerably larger doses of insulin during the last of their lives, apparently due to the increasing encroachment upon the pancreas by the growth.

8) LACK OF MUSCLE TONE: Patients long bed ridden such as cases of chronic arthritis who lose muscle tone and have no exercise develop an apparent resistance to insulin. Case No. 2197 had pericarditis and acute arthritis in June 1927. On January 6, 1928, she had had no fever for 2 months, but, confined to bed, her muscles soft and flaccid from disuse, on a diet of carbohydrate 75 grams, protein 65 grams, fat 109 grams, she required 101 units daily. In 6 weeks of active and passive muscle training at the New England Deaconess Hospital she reduced her insulin to 60 units with a diet of carbohydrate 100 grams, protein 69 grams, fat 60 grams. Eight weeks later her urine was sugar free with but 18 units daily.

Lawrence[33] describes a boy with strikingly poor musculature. It is notable that strenuous muscular exercise for two hours failed to increase the effect of insulin in reducing the blood sugar in this case. McCrudden[55] and Sargent noted a blood sugar of 0.064 per cent. in a case of progressive muscular dystrophy.

9) CIRRHOSIS OF THE LIVER: Chabbrol and Hebert[36], Labbé[37] and Leech[38] have reported cases requiring unusually large doses of insulin in which (a) hypertrophic cirrhosis, (b) pronounced hepatic insufficiency with coma, and (c) jaundice and a pigmentary liver were present, respectively. Cirrhosis of the liver alone never leads to diabetes, but when present in a diabetic it may seriously disturb the mechanism of carbohydrate metabolism. Wagner and Parnas[39] described a non-diabetic boy with an enlarged liver, whose fasting blood contained almost no sugar, always under 0.02 per cent., but whose blood sugar after food rose above normal, even to 0.42 per cent. Adrenalin had no hyperglycemic action. They concluded that the organic change in the liver had destroyed the glycogenic function of the liver.

Another hint of the importance of disturbances of hepatic function is afforded by the observations of Markowitz[56] who found that dehepatized dogs were quite resistant to insulin.

10) HEMOCHROMATOSIS (Bronze Diabetes): This condition in which a known destructive agent, hemofuscin, produces necrosis and death of pancreatic cells as well as of other tissues in which it is deposited may be accompanied by diabetes when sufficient interference with the function of the Islands of Langerhans has occurred. Sheldon[40] noted a correlation between the amount of iron deposited in the pancreas as hemofuscin and hemosiderin and the presence or absence of diabetes. In his case of hemochromatosis in which hepatic insufficiency and ascites were prominent, glycosuria was absent, and the concentration of iron in the pancreas was but 0.55 per cent. In all cases recorded by him where the concentration of iron exceeded 1.5 per cent. diabetes was present. With progressive deposition of pigment in the pancreas the severity of the diabetes increases. The final stage is seldom seen since most patients die of some intercurrent infection.

Widal, Abrami, Weil and Landat[41], reported a case of bronze diabetes in which large doses of insulin were required. Vedel, Baumel and Page[42] also described a case and discussed the effect of insulin in bronze diabetes.

Allan[58] described a case with marked bronzing

of the skin who required 500 units to render his urine sugar-free. His article gives an excellent discussion of the subject.

In our case above described a most advanced condition of deposition of pigment in heart, liver and pancreas was found. It is permissible to assume that insulin production was almost nil and that in addition the organic changes in the liver may have largely destroyed its power to remove sugar from the blood and store it as glycogen. Only by the action of massive doses of insulin could this chemical process be brought about. One may also suppose that the skin and muscles similarly affected functionally were deficient in removing sugar from the blood.

11) ATHEROMATOUS CASES: Occasionally in elderly, very sclerotic and often emaciated cases a surprisingly large amount of insulin is well borne without marked reduction in the blood sugar. Umber[43] reported such a case. These patients often have high renal thresholds for glucose, and as Stone[44] pointed out are prone to show at autopsy hyaline changes in the Islands of Langerhans as well as hyaline change in other tissues.

12) DISADVANTAGEOUS COMBINATIONS OF DIET AND INSULIN: The experiments quoted by Macleod[45] show clearly that when diets low in carbohydrate are given the glucose utilized per unit of insulin is much less than when more carbohydrate is used. Furthermore the larger the dose of insulin the less its glucose equivalent per unit becomes. Thus in depancreatized dogs the glucose equivalent was 24 grams per unit when 4 units were given and only 3 grams per unit when the dose was 40 units.

13) UNEXPLAINED CASES: Lawrence[33] studied a diabetic boy of 17 years, who without complicating infectious disease or disease of the endocrine glands required 220 units of insulin daily. However his musculature was poorly developed and he had acne rosacea each of which may have been an important factor. When it was omitted he developed coma, but after recovery from coma his insulin requirement was but 80 units, although later he needed 160 units. Unlike severe cases of diabetes, his fasting blood sugar was low, varying from 0.12 to 0.22 per cent., but large doses of insulin were necessary to counteract the hyperglycemia following the ingestion of food. During the night, insulin having been given before the evening meal, his blood sugar varied between 0.06 and 0.09 per cent. The fall in blood sugar during fasting suggested that his store of glycogen was low due to imperfect storage of glycogen. Lawrence concluded that some disturbance in glycogenesis prevented the withdrawal of sugar from the blood, and in the absence of evidence of disease of liver or muscles, suggested that some co-enzyme necessary for the promotion of glycogen by insulin was absent or present in insufficient amount in the case.

Sztavrovsky and Waltner[46] described a girl of 12 years, no larger than a seven year old child with glycosuria varying from 3.5 per cent. to 7 per cent. On a basal diet 300 units of insulin had no effect upon the sugar in the urine, but the blood sugar fell from 0.20 to 0.07 per cent. Either an endocrine disorder or severe malnutrition with a low renal threshold (possibly a combination of renal and true diabetes) is suggested.

Falta's[13] case, apparently resistant to 160 units, later improved on a diet consisting chiefly of 5 per cent. vegetables and was reported by Bosch[47]. Matthes[48], Von Noorden and Isaac[49], Jaksch and Wartenhorst[50], and Keller[51] have also recorded cases requiring unexpectedly large amounts of insulin. Strauss[8] describes a 14 year old child whose blood sugar was never normal during four months treatment with insulin from 80-100 units daily. When she returned in coma, however, the blood sugar was reduced from 0.60 per cent. to 0.06 per cent. by insulin. She, like the other cases of this paragraph, can only be described as mildly resistant.

DISCUSSION: The interest of many writers has been concerned with the supposition that some substance antagonistic to insulin was present in cases of resistance to insulin treatment. Thus Dietrich[52] found that the normal utilization of glucose by red blood corpuscles was prevented if the red cells were bathed in a dialyzate of diabetic plasma and interpreted this result as indicating the presence of some substance antagonistic to insulin. Hausler and Hogler[53], on the basis of experimental studies also concluded that some substance influencing the fixation of glucose in red blood corpuscles is absent in cases resistant to insulin. Mauriac and Aubertin[12] concluded from a series of cases showing variation in the amounts of insulin from time to time that there are cases of diabetes in whom the pancreatic function is normal but the insulin is neutralized by other substances of uncertain character. That epinephrin and pituitrin have such a neutralizing effect is well known. Karelitz, Cohen and Leader[57] studied the inhibiting effect upon insulin of human blood when the mixture was injected into rabbits and found that the inhibiting substance was more abundant in the cells than in the plasma, more so in diabetic blood than in normal and still more so in leukemia blood or pus.

The probable existence of an enzyme in normal muscle which reacts with glucose only in the presence of insulin has been suggested by Ahlgren[54], who has given the name "glycomutin" to such an enzyme which in the presence of insulin changes ordinary glucose to a more reactive form. Lundsgaard, Christen and Holbll[59] have called it "insulin complement." Taussig

and Lawrence offer as a possible explanation of the resistance to insulin in their case an absence of some such muscle enzyme. Further study is needed to establish the nature of such enzymes.

SUMMARY: A case of hemochromatosis is reported in which 1680 units of insulin daily failed to prevent coma.

No instance of true diabetes in which insulin failed to reduce the sugar of the blood has been found.

The cases of relative resistance to insulin so far observed may be classified on the basis of our present accepted knowledge as follows and with their classification their explanation is simplified:

(1) Destructive processes in the pancreas with great limitation of the insulin-producing tissue, as in cancer, hemochromatosis, acute pancreatitis.

(2) Complicating disease of other endocrine glands notably the thyroid, the pituitary or the adrenals, or acute infections which stimulate such glands, (i. e. the thyroid) to over-activity.

(3) Complicating disturbance of the function of the liver as in cirrhosis, chronic passive congestion, syphilis.

(4) Disturbances of the function of the skin and muscles, due either to complicating disease, to poor development, or disuse.

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CHRONIC DEAFNESS

An Endocrine Study of a Thousand Case Histories

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THE subject of subacute and chronic nonsuppurative disease of the middle ear is one to which much attention has been given of late years, but at present the results, although considerable, have not been as correspondingly great as have those in cases of chronic suppuration. The most striking headway has been made in the recognition of the causes leading to chronic deafness, which has resulted in the treatment of those conditions of the upper air-passages which are in part responsible for it.

One of the main difficulties in the way of investigation has been the lack of pathological material, especially in the early stages, where-with to differentiate the various conditions met. Persons suffering from chronic deafness due to nonsuppurative middle ear changes do not die from their disease, whilst, should they succumb to other maladies during the early stages of their ear affections, it is very possible that it has not been diagnosed, and the chance of a competent pathologist and otologist obtaining their temporal bones is unlikely.

There is great diversity in the classification of these forms of deafness, and the student often finds that a diligent perusal of their various descriptions only serves to render him the more bewildered. In systematic teaching, it is a matter of some difficulty to put forward a good arrangement, clear and intelligent to the learner. The one which I believe to be correct is to recognize only two main forms, catarrhal inflammation and otosclerosis. Of these, the first is the

*For record and address of author see "This Week's Issue," page 234.

more common, and as the name implies, is inflammatory in type. It is, moreover, a true middle ear condition, whereas the second—otosclerosis—is neither inflammatory nor tympanic, but is a state wholly, or in large measure, affecting the bony labyrinthine capsule. Confusion has arisen between these two forms, because, in the first place, as regards symptoms, there is a good deal of similarity between the later stages of catarrhal middle ear inflammation and otosclerosis; and in the second place, the two conditions may be coexistent in the same person.

The secret of the successful treatment of catarrhal otitis lies in the correction of abnormal conditions of the upper air-passages. Another important factor in its management lies in the combating of these conditions at as early a stage as possible. Unfortunately, there is no organ so persistently neglected by the laity as the ear. A man who is the subject of an affection of the eye does not usually wait until his sight is irretrievably impaired before he seeks advice, but persons who are gradually failing in hearing will wait until their deafness is far advanced before they even contemplate investigation and treatment. This neglect handicaps the otologist most severely in his work, and helps to bring the science of otology into disrepute.

At first sight there appears to be little in common between inborn derangements of function and structural defects, but on further consideration the difference is seen to be apparent rather than real. Almost any structural defect will entail some disorder of function; sometimes the former is almost inappreciable, and the resulting functional disorder so conspicuous that it completely overshadows the defect to which it is due. Very slight structural changes may lead to profound functional derangements, as witness the effects of atrophy of the thyroid gland, whether congenital or acquired in later life, and the stormy metabolic disorders which may ensue upon comparatively insignificant morbid changes in the pancreas. Thus, briefly, I wish to bring your attention to a large series of cases studied intimately from this angle.

THE THYROID

Any account of the endocrine glands is bound to begin with the thyroid. This is because it has been studied longer and more intimately than the others, with the exception of the pancreas, and research into its functions has in no small measure opened the way to comprehension of the rest.

The reasons for this prominence are obvious. In the first place, enlargements of the organ are very common, and owing to its superficial position in the neck such enlargements are easily visible and, if considerable, are very unsightly. Further, the fact that goitre is endemic in certain districts all over the world early set men's thoughts at work to find a cause for this phenomenon. Later it was shown by Graves and Basedow that certain forms of goitre, even though the enlargements were slight, were associated with very serious symptoms, prominence of the eyeballs, rapid pulse and breathing, nervous imbalance and progressive weakness.

Associated with goitre in certain cases was found the condition of "cretinism," a lamentable disease in which both bodily and mental development is arrested at an early age, and the individual becomes a more or less idiotic and deformed dwarf, with a strange appearance of old age in childhood. We have therefore, simple goitre, or enlarged thyroid, causing no general symptoms; goitre associated with cretinism in some cases and with Graves' disease in others; further, both cretinism and Graves' disease arising without apparent enlargement of the thyroid; and finally, thyroid failure with and without myxoedema, associated, apparently, with all stages of hypertrophy and atrophy of the gland. All these different manifestations of disturbed function become quite comprehensible when we realize that they depend essentially on an excess, deficiency, or abnormality of the internal secretion of the gland, the size of which is no certain index of its activity.

Thus the gland may be enlarged without disturbance of its function, or to compensate for a shortage in the system of a certain element, thus giving rise to simple goitre; it may be enlarged and coupled with excessive secretion (Graves' disease), equally with secretory failure causing destruction of its function (goitrous cretinism). Further, there may be excess of function without enlargement, now generally called hyperthyroidism, or conversely a diminished function without enlargement or apparent atrophy, causing hypothyroidism.

In a series of over a thousand consecutive case histories that I have studied, one hundred forty-eight, or fifteen per cent., presented thyroid disease, either hyper- or hypo-functional in character. In this series of cases deafness was a presenting symptom in eighteen per cent. and of this number, over eighty per cent. fell in the hypo-functional group. Two common symptoms seen in deaf people, namely tinnitus and vertigo, were noted in the histories in this series as thirty-four per cent. and fifteen per cent. respectively. The predominance of tinnitus was possibly due to the fact that it was observed in all cases in which secondary anemia was a symptom.

I cite the following two thyroid cases as illustrating very well the many points cited above:

CASE 1—Male, sixteen years old, a freshman in college, presented himself with disturbing tinnitus in both ears which was intermittent and increased when hearing was less acute. Both ear canals were very scaly and dry and he felt that he was having increased difficulty in understanding conversation. There had been increasing ear trouble since he was two years old, when he had his first attack of pneumonia, associated with bilateral incisions of the drum

membranes. For the next few years he had repeated attacks of earache, which were relieved by incisions of the drum and also several attacks of pneumonia. In addition he had had measles, two tonsillectomies and at one time several short attacks of blurring of vision. In the main he had been strong and active. He had an attack of hives last spring. The residual history is not informative.

Physical examination showed good development and fair nourishment. There was slight dandruff, thick grayish skin, an exudate from both canals, the skin of which was slightly red and the canals markerly narrowed. The eyes were negative. The nose showed inflamed mucosa and crusting. The abdomen was rigid over the right upper quadrant, especially near the mid-line. The remaining examination was not remarkable. The urine volume was normal, with good elimination, and fair balance. The protein intake was adequate; the nitrogen partition normal; one specimen showed albumin; the sediments were negative. The blood morphology showed a definite lymphocytosis, the chemistry was normal; the serologicals were negative. The phthalein test was slightly below normal. The galactose tolerance was definitely depressed. The patient was 10% underweight but showed a normal lung volume. Two confirmatory basal tests gave an average rate of —18% coupled with a slightly slow pulse. An x-ray of the sinuses and mastoids was negative. The eyes were normal except for marked cutting of the upper fields due to lid droop. A heart examination showed a normal organ. An audiogram indicated depression throughout the auditory curve. A test of liver function by the duodenal method (McClure) indicated a considerable disturbance in biliary function. The Graham test was positive.

Diagnosis: Hypothyroidism (mild) with liver dysfunction.

Comment: The pathology in this case is at first sight not clearly defined. The low basal rate, a low sugar tolerance and lymphoid blood would be consistent with a pituitary dysfunction, but none of the other findings are confirmatory. That he was above the normal, or better the average height, at the age of 16 might also be adduced to support a pituitary hypothesis. The results, however, of the Graham test, together with that of the duodenal function study, showed definitely that there was a liver dysfunction. This finding would explain those observations inconsistent with a thyroid failure which the major portion of the test suggested. Association of deranged liver function with thyroid disease (hypofunctional) is a fairly common finding. The diagnosis as given above was offered. The local treatment consisted in keeping all water from the ear canals, the skin and exudate mopped clean, care being taken not to break the underlying canal skin. Small daily doses of thyroid with two of his meals, increased to the three meals, were initiated and in two weeks he began to show a marked change for the better. This improvement has increased with the realization of the necessity for constant medication.

Case 2—A married man, 56 years old, head of an industrial organization, complained of severe frontal headaches from which he had suffered for the past ten years. These have been associated with attacks of vertigo, during some of which the patient has fallen. Twenty years ago he developed tinnitus in the right ear for a short time and this recurred 10 years later and was accompanied by nausea and vomiting. The attacks recurred at two to three month intervals and were associated with progressive loss of hearing in the right ear. Three years ago the tinnitus ceased, as did the nausea and vomiting. The severe frontal headaches have persisted, manifesting themselves after the patient had gotten at work, even though he had felt perfectly well up to that time. A few minutes' rest in a horizontal position relieved all symptoms. If the attack occurred while walking, he experienced some vertigo and a sense of insecurity. He might fall but recovered in a few minutes. There was no frothing at the mouth or loss of sphincter control. His family history does not seem to be relevant. He had been married for 21 years, his wife had one miscarriage during the first year of the marriage and had never conceived again, although contraception has not been practised. He recorded several minor ailments; scarlet fever; quinsy sore throats; a blow to the head at the age of 7 with tenderness persisting for a year. At the age of 21 he was thrown from a carriage, breaking two teeth. His remaining history showed slight dyspnoea on exertion; constipation of 40 years' duration, though for the past few days, the bowels have relaxed with warm water. There was a slight ataxia.

Physical examination showed an obese man, with florid complexion, some dilatation of the scleral vessels; the left ear was normal, while the right showed a retracted drum, and the audiogram indicated marked bilateral depression of aural acuity. There was some cyanosis of the lips; the teeth showed much dentistry; the heart and lungs were apparently negative. There was a thick pad of abdominal fat. He had some clubbing of the distal interphalangeal joints of all fingers; there were two areas of skin pigmentation over the right tibia and three on the left. The knee jerks were hyperactive. The urine volume was distinctly above the normal; elimination was high and the balance very poor. His protein intake was entirely inadequate, but the partition formula was normal. A small amount of albumin was reported. The blood morphology was substantially normal with the exception of a 3% eosinophilia. The blood chemistry showed a high uric acid. The serological tests, including the results of a spinal puncture, were normal. Both phthalein and CO_2 were normal. The patient was 38% overweight and appreciably below his predicted lung volume. The basal rate was —31%, with normal physical findings. X-ray showed prominent diploic veins and a retained root, which was not infected, while a gastric series showed a mass in the right iliac fossa, the stomach and duodenum being negative. The neurological examination was suggestive of a labyrinthitis with partial destruction of the end organ. The eye examination showed a moderate vascular sclerosis, yellowish discs, and slightly hazy lenses, but was otherwise substantially normal. The Barany test entirely eliminated a pontine tumor, leaving the suggestion only of an infiltrating oedema of the eighth nerve. The galactose test was normal; he reacted positively to a number of proteins by the endermal method.

Diagnosis: Hypothyroidism.

Comments: A number of findings in this examination could be interpreted in terms of a primary or secondary pituitary involvement. The low basal rate was not inconsistent with a pituitary condition, as the patient's low protein intake would exercise a definite downward influence. There are several basal rate measurements, all of which showed a definite downward tendency. The normal galactose test practically eliminated the pituitary though not ruling out a central nervous lesion. Other observations including the normal lumbar puncture with normal spinal fluid rendered this latter improbable. A thyroid failure was the only condition consistent with all of the observations. On this basis treatment was instituted consisting of carefully controlled thyroid medication. The patient has shown very marked and steady improvement, which undoubtedly will continue.

THE PITUITARY

In the case of the pituitary body the intimacy of connection with the circulatory and nervous

systems is not so marked as in the case of the thyroid and suprarenal glands. The small size of this organ and its proportional blood supply suggest that its internal secretions must be of exceptional potency to exercise the powerful effects which they certainly do. The vital importance of the pituitary body is, however, suggested by its anatomical relations, for nature has taken altogether exceptional precautions to protect it from injury (as with the labyrinth of the ear).

The gland, however, although thus protected from injury and difficult of access for operation or experiment, is not immune to disease. Thus, as deficiency in the thyroid function will produce one set of conditions (cretinism) in infancy or childhood, and quite a different syndrome (myxoedema) in adults, so an excessive or prolonged over-activity of the pituitary function during the growing years may produce a giant, while a similar hyperfunction in later life, after the period of normal growth, will produce the deformities incident to acromegaly.

Of no less importance are the functions of the posterior portion, which, it will be remembered, is a direct derivative of the brain itself, and thus has certain affinities with the suprarenal body, as the anterior portion has with the thyroid. This portion is concerned with the metabolism of sugar. Also of importance is its association with the circulation, and therefore of blood pressure. Diminished activity of the gland is associated with torpor as well as adiposity, while dysfunction of the pituitary gland has a profound influence on the mental and emotional state.

Again, in this same series mentioned above, two hundred and eighty-nine cases, or twenty-nine per cent., showed frank pituitary involvement. In this series of cases deafness was a presenting symptom in twenty-two per cent. and of this group, seventy-five per cent. presented the dysfunctional type of pituitary disorder. Again, taking tinnitus and vertigo as frequent accompanying symptoms in deaf individuals, the above symptoms presented themselves in a ratio of thirty-six per cent. and twenty-four per cent. respectively. As in deafness, so with the presenting symptoms of tinnitus and vertigo, dysfunction of the gland predominated, the anterior lobe being generally hypoactive, the posterior, hyperactive.

As illustrative cases the following two bring out the suggestive points in question:

CASE 3—A single woman, telephone operator, twenty-eight years of age, presented as her chief complaint an intense, deafening tinnitus in both ears, which was of four years' constant duration. Of late the intensity had markedly increased, while for the past two years the hearing of the left ear had rapidly decreased, the hearing of the right ear having diminished distinctly two years earlier, or four years ago. The immediate family history was not available. The patient recorded the usual minor ailments; scarlet fever, influenza in 1918, and a tonsillectomy and adenoidectomy last year. She had an abscess in the right ear, two years ago, with spontaneous discharge and had been subject to severe colds in the head with considerable nasal discharge for a very long while. She had been troubled earlier with flatulency and had a tendency to constipation. The menstrual history was substantially negative.

The physical examination showed a marked degree of obesity, which was said to be uniformly distributed, an impression not borne out by the measurements, which showed a girdle type. There was slight pilosity about the areolae, tendency to masculine distribution of pubic hair, and some pilosity on the chin. She showed an eczema involving both legs. The urine volume was normal, the elimination poor, the balance fair; indican was increased. The patient's protein intake was definitely below a maintenance level, and the residual nitrogen showed an upward tendency. The blood morphology was substantially normal, and the blood chemistry completely normal. The serologicals were negative; phthalein and CO_2 normal. The patient was 59% overweight and as the sitting height index was well above the normal, her obesity was even more pronounced. The lung was slightly reduced. The first basal rate showed —11%, the second —19%, with substantially normal physical findings. X-ray of the skull, sella and sinuses were negative as was a nose and throat examination. The Barany test showed sluggish reaction time while the audiogram gave evidence of lowered aural acuity. This finding, coupled with bone conduction tests and other measurements, indicated an otosclerosis. The eye examination showed vascular hypertension and some enlargement of the right blind spot. A duodenal function test (McClure) showed normal biliary function; the sugar tolerance was somewhat lowered, as she was positive with 30 grams.

Diagnosis: Pituitary Dysfunction (anterior lobe hypo-; posterior lobe hyperactive).

Comments: The basal metabolic rate is lowered, with but slightly lowered blood pressure; the urine examination indicates a low protein intake, with a raised residual nitrogen fraction. The blood uric acid is above the normal, the galactose tolerance reduced. There is secondary anemia with a lymphoid blood. The treatment has consisted of attention to the intestines and the daily administration of twenty grains of anterior lobe pituitary extract under careful supervision. There has been a loss of the excessive weight and a very decided diminution in the tinnitus as well as a distinct improvement in the hearing, especially the left ear.

CASE 4—A married woman, 30 years of age, gave as a chief complaint an increasing deafness in both ears. This condition apparently followed several attacks of sore throat, the first of which occurred eight years ago. A tonsillectomy a year later did not seem to have exercised any influence. Two maternal uncles, as well as a brother, showed similar deafness. The patient had the diseases of childhood; a chronic bronchitis; an appendectomy in 1923, and later a laparotomy for some reason to her unknown. The patient suffered now from marked dizzy spells and was easily fatigable. The menstrual history showed an onset at 16 and was said to be regular.

Physical examination showed an obstruction in nasal breathing and two missing teeth; otherwise the findings were quite normal, except for the deafness. The urine showed a normal volume, elimination decidedly poor and balance poor. One specimen showed albumin, both sediments being negative. The residual nitrogen fraction in one specimen was distinctly high. Phthalein was normal. The serologicals were negative. The galactose test was positive with 20 grams, a definitely lowered tolerance. The blood morphology showed the haemoglobin and red count slightly low; the blood was markedly lymphoid in character.

The blood chemistry showed a high uric acid. The patient was 8% overweight and exhibited but three-fourths of her predicted lung capacity. The basal metabolic rate was —17%, with lowered temperature and blood pressure. The eyes showed yellowish discs, somewhat enlarged blind spots, with definitely contracted color fields. The x-rays and neurological examinations were negative. The Barany test showed sluggish responses, while the ears were quite typical of otosclerosis.

Diagnosis: Pituitary Dysfunction, (anterior lobe under-, posterior lobe over-active).

Comments: This case showed very marked psychotic changes, a phase which I find many otosclerotics show to a high degree. Under large doses daily of anterior lobe pituitary extract the mind has cleared decidedly, the hearing improved markedly. I might add that the hearing improved more in the first six months of active medication than it did during the next year, but during the past few months it again has started to improve, perhaps because the dose has been raised to nearly double the primary amount.

THE OVARIES

Without going into the physiology of the ovaries, it is sufficient to say that there can be very little doubt that these organs play a vital part in the production of secretions which, although we are ignorant of their full importance, are necessary for the development of a normal individual; not only in so far as sexual characteristics are concerned, but even with regard to the adequate working of the body metabolism.

In the current series of cases studied, one hundred nineteen, or 12%, were ovarian in origin and all of these exhibited failure, either of functional or surgical origin. Deafness was a presenting symptom in 13%, while 34% showed tinnitus and 22% vertigo.

As an illustrative case I cite the following as rather typical:

Case 5—A married woman, aged 24 years, had as a presenting symptom an increasing binaural deafness, with vertigo and tinnitus which kept her awake at night. There was a history of deafness in the family and that of the patient was first noted with the establishment of the catamenia. When the tinnitus was less intense, the hearing was somewhat clearer. She was able to hear over the telephone very easily and she had no difficulty in hearing music. The vertigo was more marked when her ever present constipation was more pronounced. She noted the usual children's diseases and influenza in 1919.

The physical examination showed a very normal individual except for the ear condition. The urine showed a lessened amount with a trace of sugar present, as well as an occasional cast and many calcium oxalate crystals. The residual nitrogen fraction was markedly raised. The blood morphology showed a marked lymphocytosis with a slight increase of leucocytes. The blood chemistry showed a blood sugar of 125 mgms., the level due probably to an emotional response to venipuncture. The serologicals were negative. Phthalein was a low normal; the CO_2 normal. The basal metabolic rate was —15%, with a depressed temperature and pulse rate, and a blood pressure of 110/68mm. The eyes were normal. The Barany test was normal. The hearing acuity was depressed in both ears, but not equally; the bone conduction was greatly prolonged. The X-ray and neurological examination were entirely normal.

Diagnosis: Hypogonadism.

Comments: The picture in the above case is very clear cut, but success in treatment is quite another story. For a period of several months I watched very closely the result of the active medication upon her ears, but beyond controlling the tinnitus, I was unable to improve the hearing curve, although the patient physically felt very much less fatigued and accomplished her work with greater ease.

THE NON-ENDOCRINE GROUP

In this series of one thousand cases, four hundred fifteen, or forty-two per cent., initially presented stigmata suggesting an endocrine pathology but failed on analysis to give evidence of endocrine disease and did demonstrate pathology of a non-endocrine character. The diagnoses, as established, cover most of the ills to which the body falls heir. Deafness as a presenting symptom occurred in 19%, with tinnitus in 31% and vertigo in 20% of the group. Deafness occurred more frequently in the cardio-renal group, tinnitus in the group of the neuroses and psychoses, while vertigo predominated in that of lesions of the central nervous system.

The following cases mark well the several points in the thesis:

Case 6—A single woman, 65 years of age, who followed a professional activity, lecturing at times and travelling extensively at other times, during the past year and a half complained of attacks of deafness and tinnitus following fatigue. She would become rested but the deafness would persist. The deafness included the voice and music. Following each one of these attacks, which would last between one and three weeks, the recovery would not be quite as complete, thus leaving a residuum of deafness but no tinnitus. Beyond the slowing up normal of a woman of her age, her past history was quite negative.

The physical examination was essentially negative beyond the deafness which has already been mentioned, with the exception of a slight metacarpal keratosis. The urine examination presented no point of serious abnormality; the occurrence of a rare hyalin cast was noted and a decidedly low value for the urea. This last could be ascribed to a dietary regulation rather than to any kidney insufficiency. The total nitrogen was low while the residual nitrogen was high. The blood morphology was negative; the blood chemistry was negative except that the urea nitrogen was slightly high. The serological tests were negative. Phthalein was normal; the CO_2 showing a slightly lower value. The basal metabolic rate, temperature and pulse rate were all within normal limits, the blood pressure being 138/86mm. The eye, Barany and neurological examinations were all negative. An x-ray series of the gastric tract showed poor elimination from the descending colon, but no growth; the faecal examination showing extensive putrefaction and large numbers of bacillus coli. She reacted positively to a number of proteins by the endermal method.

Diagnosis: Catarrhal Deafness of toxic origin.

Comments: The entire picture presented an extremely well preserved woman of 65 years of age. Following the ingestion of the barium meal it was noted within forty-eight hours that the deafness had become less acute; as a result of this suggestion, the putrefactive changes were decreased by active measures and the tinnitus ceased while the hearing acuity improved. At the same time the foods to which she showed sensitivity were removed from her

diet. On several occasions with a return of the deafness, another x-ray series would show a repetition of the above condition, following which the above treatment would give the desired relief.

CASE 7—A married man, 20 years of age, presented as a chief complaint an increasing bilateral deafness, without vertigo, for the past four years, but early in the deafness a very constant, distressing tinnitus appeared. During this past four years there was a period of nine months when the deafness remained stationary, then progressed again without any discernible reason. He complained of paracusis and improved hearing during amplification of sound. Beyond the father's deafness, the family history was negative. He had been married one year; wife never pregnant. He had had diphtheria and scarlet fever in childhood, typhoid fever with chorea following it twelve years ago, and influenza eight years ago. His history otherwise was negative.

The physical examination showed a slightly palpable thyroid gland, and some acne on the face, but was otherwise insignificant. Beyond smallness of volume, the urine was negative. There was a high residual nitrogen. The blood morphology showed a leucoid blood and a low color index; the blood chemistry was normal. The serological tests were negative. Phthalein, CO_2 and the vital capacity were normal. The basal metabolic rate was —3%, with normal clinical findings, except for a slightly febrile temperature. The audiogram showed a material impairment of hearing; the bone conduction was lengthened, the Barany test was normal. The eye examination showed slightly overfilled veins and marked contraction of form and color fields. The x-ray and neurological examinations were negative.

Diagnosis: Otosclerosis.

Comments: There is nothing in this examination to indicate any endocrine element. In fact, the whole examination is negative of any really significant departure from the normal. He was advised to change his work to a noisier place. He did this and found that the deafness bothered him less and he was less fatigued at the end of the day.

CASE 8—A widower, 46 years of age, father of the above case, was said to be an otosclerotic. However, the deafness began ten years ago, following a severe head injury, and at the same time the vision became affected. The deafness had not perceptibly changed since the accident, although he has paracusis, improvement in hearing during amplification, but no tinnitus. The family history was not informative. The patient's marital history was negative and his own history, beyond bad teeth which might well be charged to his severe accident, two or three fractures in childhood, and a recent transitory edema of the right ankle, was not remarkable.

The physical examination showed no evidence of an injury to the face; there was slight nasal obstruction without apparent blocking; otherwise negative. The urine was normal in volume and elimination. Urobilinogen was reported as positive and the sediment showed numerous leucocytes and a rare fine granular cast. The nitrogen partition showed a somewhat high residual fraction. The blood morphology showed a lymphocytosis and a 3% eosinophilia. The blood chemistry was normal. The serological tests were negative. Phthalein and CO_2 were normal. The basal metabolic rate was plus 10%, with a slightly rapid pulse rate and a lowered blood pressure. The eye examination showed an apparent marked contraction of form and color fields and a slightly hazy medium in the left eye. The audiogram showed a marked loss of hearing throughout except in the upper part of the speech area. The Barany test showed depressed reaction time only, while the neurological tests showed nothing remarkable. The x-ray showed a small sella turcica but was otherwise negative. On aural inspection both drums were retracted, scarred, dry and the bone conduction was positive to the Rinne test, the Weber equalizing to both ears.

Diagnosis: Chronic Deafness (traumatic); possibly liver dysfunction.

Comments: While one or two points in this examination suggest a pituitary lesion and there is undoubtedly some pathology of the kidney, there is no real evidence of any endocrine disturbance. The deafness was probably the result of the severe injury, as was the condition of the eyes. It is not remarkable that the x-ray did not show old fractures of the skull. Besides the kidney lesion, he showed a possible liver dysfunction.

These last two cases are cited as they were originally examined for a possible otosclerosis exhibiting the influence of heredity. The examinations, however, did not confirm this. The younger man was seemingly a true otosclerotic. The father, on the other hand, had a history of earlier trauma to the head, which could well be a direct factor in his deafness. Beyond the deafness they showed one other point in common, which was most striking, namely, a marked and peculiar contraction of the form and color fields. This latter condition has been noted by one of my associates in two conditions in which a resultant toxaemia is conceivably a factor, namely, pulmonary tuberculosis and gall bladder disease (unpublished data, A. W. R.). The older man gave certain evidences suggesting a possible liver dysfunction. It was impossible to complete the study with them and resolve this matter. One may speculate, however, on the possible existence of a dysfunctional liver state in both father and son, which might be conceived to influence their hearing acuity.

SUMMARY

Patients exhibiting thyroid failure are prone to a marked fatigability, which develops with a less than normal expenditure of energy. In this way they resemble the neurasthenic, just as in their somnolency after food, they remind the observer of the lithaemic subject. The individual is never fit; he is generally tired and finds work a burden; his concentration is never at its best when faced with a problem; in a word, he is as sluggish mentally as he is languid physically. The reflexes are tardy but they are always present. Giddiness is yet another symptom which almost always presents itself at some stage of the disease and with which in some cases is associated a swimming sensation. Tinnitus aurium is common in the form of buzzing, roaring, whistling or shrieking noises; while such patients sometimes experience even more serious sensory disturbances, as the hearing of voices or the ringing of bells.

Myxedema is a frequent finding in thyroid failure, although an amyxedemic type has been described by this institution. The thickening involves the skin and according to many observers, other tissues as well. I feel that it is not illogical to explain some of the deafness seen

in these cases to a colloidal infiltration. Certainly, treatment with the correct thyroid substance reduces the edema and causes local improvement in the hearing.

Diseases of the pituitary gland present symptoms which are markedly influenced by the time of the appearance of the deficiency in relation to the status of maturity of the individual. The pictures of preadolescent and postadolescent failure are too well known to require elaboration. With the pituitary, as with the thyroid, suitable medication is extremely effective in those cases where careful laboratory and clinical studies have established a definite diagnosis. It is perhaps not too much to say that where organotherapy is administered after the definite establishment of the diagnosis, the use is less speculative than with certain of the simple inorganic remedies, which, in ameliorating one symptom are prone to initiate others. It is a matter of record, further, that in the endocrinopathies a whole host of unusual and even bizarre symptoms may develop which are seemingly wholly unrelated to the primary condition. Correction of the latter, however, by suitable therapy concomitantly rectifies many of the physical and mental deviations which have apparently existed coincidentally with it.

It is axiomatic that in every well-defined disease condition individual sufferers betray a tendency to variation from the type, which presumably expresses the personal idiosynerasy, and presumptively arises from minor individual deviations of which today we have no knowledge. Just as in a group of so-called normal people few, if any, will conform exactly to the average, so in disease the textbook picture is but seldom realized. Where a correlation exists between lowered basal metabolic rates and chronic deafness, it seems most probable that both are results rather than causes. The former indicates a lowered functional activity, a depression of the respiratory exchange, a diminished energic output. Similarly, in patients demonstrating a lowered aural acuity which cannot be traced to a demonstrable infective process, there are likewise observed evidences of a decreased metabolic level. The endocrine glands are among the powerful regulators of the levels of body metabolism. In conditions of functional failure, lowered basal rates are invariably found. Where these are associated with a loss of aural acuity for which no infective or other direct or mechanical cause can be demonstrated, it has seemed a fair presumption that the hearing failure might equally be a result of lowered metabolism deriving indirectly from the endocrine condition. Experience has shown this to be the case in a very appreciable percentage of true otosclerotics. It follows as a corollary to this postulate that other and non-endocrine agencies producing lowered metabolic levels may equally affect the acuity of hearing as one indirect end result. It is on this basis that we have sought to explain those otosclerotics in whom no endocrinopathy was demonstrable.

Otosclerosis is not an inflammatory condition. It is a degenerative process in the organ of hearing as a whole, and for this condition to result, seemingly a tendency toward that process must be present in the individual. This does not necessarily mean that hereditary tendency applies in every case. Again, the findings in each bone are not always the same; still there probably is an unrecognized ratio between old bone absorption and new bone deposition in its place. It would seem, therefore, necessary to study completely, not only the temporal bone, but also the brain, including the auditory nerve tract to the brain cortex. Many feel that when they hear the word otosclerosis, it is quite like a death warrant. Now I think that the rate of progress in many otosclerotics is very slow, in fact in many of them the process does not seem to change perceptibly from year to year. Primarily, why in one case embryonic maldevelopments should be represented by an overgrowth, whilst in other cases no such tendency occurs, is as little known as is the cause of the development of tumors generally, and is at present completely unexplained. We feel, however, that one logical explanation can be derived from the influence of the endocrine secretions on certain phases of metabolism. We feel that otosclerosis should be regarded as hyperplasia, since the reason why some cases of this disease do well under treatment is explained by the law of reversible reaction. In other words, an equilibrium which has been notably displaced toward one final state is moved back toward the antithetical condition and deposition is followed by resolution.

THE NEW HAMPSHIRE MEDICAL SOCIETY

GENERAL MEETING

Tuesday, May 28, 1929, 10 A. M.

The meeting was called to order by the President, Dr. Joseph J. Cobb.

The Reverend Ernest Miller of Manchester gave the invocation.

DR. COBB: We will hear Alderman Emery, representative of Mayor Moreau.

ALDERMAN EMERY of Manchester: *Mr. President and Members of the New Hampshire Medical Society*—I notice this is the one hundred and thirty-eighth annual meeting so I am not addressing the charter members. Mayor Moreau is out of town to attend the meeting of the New England Council which provides ways and means of getting new industries to locate in several of our New England cities and to help finance them. So when we hear some of our pessimists say that New England is dead, with Mayor Moreau on the job I assure you New England is still alive.

I am a member of the board of aldermen, and Mayor Moreau asked me to come down, and I complied. I do not feel that I am able to give a stirring address of welcome but I am delighted to say that we are glad you are here in Manchester this morning for your convention.

It isn't my purpose to present you the keys of the city because we feel that the more friendly we are, the more friends we have, and the more neighborly we are, the more neighbors we have. So we never lock our doors to our friends or neighbors. And if it so happens that you run by a stop sign or attempt to mail a letter in a fire alarm box, we will try to see that you get off easily.

It is hard for a layman to talk to a body of professional men but easier to talk to business men because we know some of the terms they use, and so I will not attempt to talk. It reminds me of the story of the man who was talking on the freedom of Ireland and when he got through he said, "Are there any people who want to ask any questions?" and a man got up and said, "I have been donating for the freedom of Ireland for years, and what has become of my money?" and somebody hit him over the head; and then the speaker said, "Is there anyone else who would like to ask a question?"

I am glad to see so many present, and we trust you will come to Manchester as often as you can as we are always glad to see you.

DR. COBB: The report of the Committee on Arrangements.

Dr. C. E. Dunbar, Chairman

Mr. President and Members of the New Hampshire Medical Society:

At a meeting of the Hillsborough County Medical Society held last fall, the Manchester members were delegated to act as a Committee on Arrangements for this meeting. As Chairman of that Committee it is my duty to outline to you our plans. I refer you to the official program for a detailed list of the papers to be read.

In behalf of the Manchester Medical Association and the County Society, I bid you welcome, and trust that you will feel at liberty to call upon any local member for any assistance or information you may desire.

This year as last all of our activities will be confined to the Hotel Carpenter, as this plan has appeared to work out for the best interests of all concerned.

The registration desk will be found in the lobby, and it is requested that all members register and procure their badges as early as possible.

Our exhibitors also will be found in the lobby as usual. Through the efforts of Dr. D. W. Parker and his committee, the exhibit this year promises to be better than ever, and it is our hope that you will plan to inspect it as thoroughly as possible. We must realize that it is the exhibitors who pay our expenses, and in return the least we can do is to show an interest in what they have on display in order that they may be encouraged to be with us at future meetings.

Dr. H. H. Marks of Berlin will be the Anniversary Chairman at the banquet which will be held here at seven o'clock sharp. He will introduce an exceptional array of speakers including our President Dr. J. J. Cobb, Gov. Charles W. Tobey, Mrs. Grace T. Amsden, H. Sheridan Baketel, M.D., Dean Lewis, M.D., and the Rev. John Nichol Mark. Plenty of good music will be provided by an orchestra and by the Varsity Club Quartet which you probably have heard many times over the radio. Dr. Badger, the Chairman of the Banquet Committee, requests that all procure their tickets at the Registration Desk as early as possible so that the hotel management may be able to make adequate arrangements. Unfortunately, in past years, some late comers have been disappointed. In order to avoid confusion this year, no tickets will be sold at the door until all those who have procured them early have been seated.

The entertainment for the ladies is entirely in the hands of the committee from the Auxiliary, headed by Mrs. Robert Flanders. They have prepared an interesting program, including a luncheon and card party to be held at the Country Club this afternoon. Tomorrow at 9:30 A. M. cars will be in readiness to take those who wish to visit the Public Library, the new Currier Gallery, the new Y. W. C. A. and other places of interest. At 11:00 A. M. there will be a business meeting at the Country Club to be followed by luncheon at 12:30 P. M. Complete programs may be procured at the Registration Desk.

In conclusion, I wish to express my appreciation to the members of the committee, who have labored long and earnestly and enthusiastically to make this meeting a success.

Dr. David W. Parker, Manchester, urged the members to visit the exhibits.

DR. COBB: I wish to introduce the visiting delegates, first Dr. M. F. Fallon of Massachusetts.

Dr. M. F. Fallon, Worcester, acknowledged the introduction by standing.

DR. COBB: Dr. Baketel of Massachusetts.

DR. R. V. BAKETEL, Methuen: I am glad to bring the greetings of the Massachusetts Medical Society to the New Hampshire Medical Society. It seems to me rather appropriate that I should be a delegate at this time because at one period some years ago I was a member of this Society, lived in Manchester, and am a graduate of the High School; and it may be possible that I may end my days in the Granite State.

I invite you all to come to the meeting of the Massachusetts Medical Society, June 10-12, at the Copley Plaza, Boston.

DR. COBB: I wish to present the

MEMBERS FIFTY YEARS IN PRACTICE

Not Presented to the Society Previously

Charles A. Fairbanks, Dover. Harvard '77.
Edward O. Otis, Boston, Mass. Harvard '77.
Frank B. Perkins, Derry. Dartmouth '77.
Nathaniel H. Scott, Wolfeboro. Bowdoin '74.
George Leete, Concord. Dartmouth '77.
Charles F. Ober, Manchester. University of New York '79.
Alonzo S. Wallace, Hudson. Dartmouth '74.

DR. COBB: There seems to be none of them present at this time.

DR. COBB: The delegate from the Medical Association of Maine, Dr. Thomas A. Foster, Portland.

DR. THOMAS A. FOSTER: *Mr. President and Ladies and Gentlemen*—It is a genuine pleasure to come over here. We are ahead of you in time. We left Portland at 8 o'clock with Dr. H. W. Twitchell, the past President of the State Society, who hopes to be at the banquet this evening, and with my friend, Dr. James A. Spaulding. I look forward with pleasure to the meeting today, having remembered the meeting at Portsmouth some two years ago. I feel very much at home here. The program contains many familiar names, names of men whom I knew at Hanover.

We haven't any special goings on in the Maine Medical Society that are of interest. A group of men are agitating for the employment of a full time secretary for the Society. It would mean increasing the dues three-fold; but many feel that a full time man could develop the organization and help out in many ways and thereby justify the increase in dues. The Maine General Hospital is undergoing a change, and I am told that a new building will be erected on the present grounds which I am told will be one of the best equipped hospital buildings in the East.

We have a meeting the seventeenth and eighteenth of June, at Poland Spring and we will be glad to see members of the New Hampshire Society there. (Applause.)

DR. COBB: We would like to introduce the delegate from Rhode Island, Dr. Edward S. Cameron, Providence.

DR. EDWARD S. CAMERON: *Mr. President, Ladies and Gentlemen*—Rhode Island is the least but not the last, but in this case the last; and I want to express my delight in having the opportunity to bring our fraternal greetings to you. I thought I was going to be missed, and I see that the most interesting program is only beginning.

It has seemed to me that after twenty happy summers spent in the White Mountains of New Hampshire you men of this northern State look down to the South to see men more lazy and more effete.

I was born in Vermont, and have to come back to your hills to get my pep. I might tell you the story of a farmer who hired a colored man from the South, named Rastus. One day I went around, knowing the southern negro to procrastinate, and I asked the farmer: "How is Rastus getting on?" and he looked in the distance and showed me a black thing, and I asked, "What is it?" and he said, "You watch it. It may be Rastus or it may be a stump. If you see it move, it is a stump."

Since the days when the Piscataqua River in 1603 was discovered a great deal has happened in New Hampshire, a great deal of which New England can be proud.

At the end of my words of greeting I want to present a personal point of view—I was born among the green hills of Vermont, I learned my medicine in Massachusetts, I spent many happy summers in Maine, I earn my living in Rhode Island, but I hope to end my life in New Hampshire.

DR. COBB: We have another delegate from Rhode Island.

DR. ALEXANDER M. BURGESS, Providence: All I can do is to emphasize these greetings of good will from the Rhode Island Medical Society.

The following papers were read and discussed:

Encephalitis Lethargica, Clarence O. Coburn, Manchester. Discussion: Benjamin W. Baker, Laconia; Edgar O. Crossman, Bedford.

The Future of Rural Medicine, John P. Bowler, Hanover, Dean Dartmouth Medical School. Discussion: Dean Lewis, Baltimore; G. V. Fiske, Manchester; Henry O. Smith, Hudson; William H. Leith, Lancaster; Louis W. Flanders, Dover.

The Responsibility of the Medical Profession to the Citizens of the State, Henry H. Amsden, Concord. Discussion: Ralph W. Tuttle, Alton; Arthur T. Downing, Littleton; John C. Lawlor, Dover; Fred E. Clow, Wolfeboro; W. R. Sanders, Derry.

TUESDAY, 2 P. M., MAY 28, 1929

Dr. Henry O. Smith, Vice-President, presiding. We have with us today a man who graduated from the Dartmouth Medical College 55 years ago, a man who has therefore been a practitioner of medicine for 55 years. He has practised in the State of New Hampshire for 51 years and he was the President of your Society seventeen years ago; and I am happy to introduce Dr. Alonzo S. Wallace, Hudson. (Applause.)

DR. ALONZO S. WALLACE, Hudson: I graduated from Dartmouth Medical College and I have been in practise since 1874. Since my fall three or four years ago I haven't been able to do very much. At that time I had counsel, and they told the nurse—(I was there at the hospital for ten weeks,) "Oh, give him enough to relieve him, you won't have him for a great while." I told the nurse "they don't know it all." I went home and got well as you see me today.

Forty or fifty years ago—that was in the horse time—I practised in this state. I had a call from an adjoining town at about twelve or one o'clock at night and I knew the patient well for I was treating her for pneumonia. They got frightened and called me and so I hitched up and drove the six miles to the patient's house and went in. The first thing I came to was a child asleep, and then I went on farther and found the patient asleep, and the patient's daughter, 18 years old, and the husband were asleep. So I went to the patient and I felt her pulse, watched her breathe, made up my mind that she was all right; and I went home and they never knew anything about it until the next day. That was in horse time. Of course, you make more noise now.

I haven't made a speech. I never could. I am very much obliged to you and to your worthy secretary and I am much obliged to the Society for the honor, and I will say good afternoon and good-bye to you.

DR. H. O. SMITH: There is one thing that should be announced and that is that this year we have one more man who has completed fifty years of membership in this Society. Dr. Perkins of Derry will be given a gold medal commemorating that fact.

DR. SMITH: At this time we are to listen to the address of our President, and I esteem it one of the greatest honors of my life to present to you our President, Dr. Joseph J. Cobb. (Applause.)

The President's Address, Joseph J. Cobb, Berlin.

Differential Diagnosis of Bone Lesions. **Dean Lewis, Baltimore, Surgeon-in-Chief, Johns Hopkins Hospital. Discussion: Carleton R. Metcalf, Concord; George S. Foster, Manchester.**

Medical Economics, **H. Sheridan Baketel, New York City, College of Medicine, Long Island College Hospital. Discussion: William E. Reed, Nashua; Abram W. Mitchell, Epping.**

DR. COBB: I see in the audience an old friend of mine, an Ex-President of the Maine Medical Association, Dr. Twitchell of Portland.

DR. H. W. TWITCHELL, Portland: *Mr. President and Members of the New Hampshire Medical Association*—I didn't expect to be called upon at this time to speak to you or at any time. I had hoped to avoid anything of that kind. I have nothing special to say to you. I suppose you have already heard from our legally appointed delegate, Dr. T. A. Foster; and I can only say that we are always interested down in Maine in what is going on in New Hampshire. We kind of feel partly responsible for you in a way for I think we started your President on his career down in Maine. I think he had the good fortune to marry a Maine lady—so far I am on safe ground.

I am sure we are interested in all your progress you are having down here; and I would say that I wish we had as good roads universally down in Maine as you have in New Hampshire. (Applause.)

WEDNESDAY, MAY 29, 10 A. M.

A Review of One Year's Autopsy Service, **Howard N. Kingsford, Hanover. Discussion: John F. Gile, Hanover; Charles Duncan, Concord; George C. Wilkins, Manchester.**

Diaphragmatic Hernia, **Lawrence R. Hazzard, Portsmouth. Discussion: David W. Parker, Manchester; Harry O. Chesley, Dover.**

The Place of Psychiatry in the Administration of Criminal Law, **Winfred Overholser, Mass. Dept. of Mental Diseases, Boston. Discussion: Edgar O. Crossman, Washington, D. C.; A. Warren Stearns, Boston; L. Vernon Briggs, Boston; Charles H. Dolloff, Concord.**

DR. D. E. SULLIVAN, Concord: I move that the New Hampshire Medical Society in general session assembled at its annual meeting heartily endorses the Massachusetts law in its application of psychiatry in criminal cases and directs its Committee on Publicity to draw up a bill to present to the Legislature of 1930 similar to the law on the statute books of Massachusetts.

Motion seconded and carried unanimously.

WEDNESDAY, MAY 29, 2 P. M.

The Smallpox Menace, **Henry O. Smith, Hudson. Discussion: Howard A. Streeter, Manchester; Charles A. Weaver, Manchester; Joseph C. Tappan, Derry.**

Pelvic Infection and Sterility in Women, **Henry Schmitz, Chicago, Gynecologist, Mercy and Cook County Hospitals. Discussion: John C. Lawlor, Dover; Walter H. Lacey, Keene.**

Edema—Causes and Treatment, **Roger I. Lee, Boston. Discussion: H. T. French, Hanover; Granville E. Hoffses, Manchester; D. E. Sullivan, Concord.**

The Secretary-Treasurer gave an abstract of the business of the House of Delegates, including the Reports of the Trustees and the Necrologist.

THE PRESIDENT, DR. JOSEPH J. COBB: *Gentle-*

men—I have reached the close of my official career as your presiding officer and it gives me great pleasure to introduce my successor and to turn over the authority to him and to place in his hands the gavel of office. (Applause.)

Dr. Henry O. Smith: *Mr. President and Members of the Society*—I wish to thank you for the great honor bestowed upon me by you through the action of your House of Delegates. I can only say that during my term of office I shall use my utmost endeavors in your service.

It is one the duties of the President every year to appoint a member of the New England Medical Council, and as my first official act it gives me pleasure to appoint for three years to succeed himself Dr. Thomas W. Luce of Portsmouth.

If there is no business to come before this meeting, I declare this meeting adjourned sine die.

REGISTRATION

The following members, visiting delegates and guests were present:

Joseph J. Cobb, Berlin
Henry O. Smith, Hudson
Frederic P. Lord, Hanover
William E. Reed, Nashua
F. J. Drury, Londonderry
J. P. Bowler, Hanover
George F. Dwinell, Manchester
C. E. Dunbar, Manchester
P. A. Pion, Littleton
F. J. Pherson, Manchester
C. H. Bailey, New York City
M. P. Badger, Manchester
W. P. Clare, Portsmouth
M. F. Fallon, Worcester, Mass.
H. W. N. Bennett, Manchester
Geo. C. Wilkins, Manchester
Alex M. Burgess, Providence, R. I.
Edw. S. Cameron, Providence, R. I.
Charles Duncan, Concord
H. M. Morse, Peterboro
H. A. Streeter, Manchester
Clarence O. Coburn, Manchester
C. A. Weaver, Manchester
C. P. Ballard, Penacook
E. O. Crossman, Bedford
Mary S. Danforth, Manchester
Bruce Snow, Manchester
Geo. S. Foster, Manchester
F. E. Clow, Wolfeboro
Emdon Fritz, Manchester
H. A. DesBrisay, Hanover
A. M. Hjort, Hanover
H. S. Baketel, W. Englewood, N. J.
R. V. Baketel, Methuen, Mass.
B. W. Baker, Laconia
Russell Wilkins, Manchester
Charles L. Tricky, Tewksbury, Mass.
D. C. Norton, Manchester
Robert Flanders, Manchester
C. F. Flanders, Manchester
D. W. Parker, Manchester
John Deitch, Manchester
G. V. Fiske, Manchester
J. C. Lawlor, Dover
H. C. Sanders, Jr., Claremont
C. F. Keeley, Claremont
H. O. Chesley, Dover
A. L. Wallace, Nashua
Ralph H. Barker, Derry
Blanche H. Barker, Derry
F. M. Dinsmoor, Keene
P. H. Greeley, Portsmouth
R. J. Bennett, Dover
George S. Emerson, Fitzwilliam
H. B. Carpenter, Portsmouth
E. B. Eastman, Portsmouth
S. T. Ladd, Portsmouth
N. W. MacMurphy, Belmont
A. W. Burnham, Lebanon
C. I. Cole, Goffstown
Maurice A. Stark, Saranac Lake, N. Y.
J. F. Robinson, Manchester
Ellen A. Wallace, Manchester
Anna Corliss Rudd, Durham
Homer H. Marks, Berlin
Dean Lewis, Baltimore, Md.
Fred B. Lund, Boston, Mass.
A. T. Downing, Littleton
Deering G. Smith, Nashua
Louis O. Wallace, Suncook
Charles Chirurg, Manchester
A. S. Mangurian, Manchester
R. W. Tuttle, Alton
K. Churchill, Lebanon
B. E. Sanborn, Manchester
F. E. Kittredge, Nashua
C. L. Smart, Laconia,
L. B. Morrill, Centre Harbor
E. B. Atherton, Nashua
J. C. Tappan, Derry
Walter Allen, Hampstead
Hubert O. Horne, Haverhill, Mass.
Charles A. Eastman, Somersworth
A. W. Petit, Nashua
A. J. Pitman, Manchester
Thomas J. Morrison, Somersworth
Walter R. Sanders, Derry
C. F. Nutter, Nashua
C. J. Monette, Plymouth
B. P. Burpee, Manchester
James S. Black, Nashua
Henry H. Amsden, Concord
H. N. Kingsford, Hanover
Chancey Adams, Concord
S. G. Davis, Nashua
E. B. Swett, Grasmere
A. S. Dolloff, New Hampton
N. B. Webber, Manchester
Walter D. Minigan, Manchester
W. A. Thompson, Manchester
H. E. Powers, Manchester
C. E. Butterfield, Concord
E. H. Carleton, Hanover
B. D. Pease, Greenville
Louis W. Flanders, Dover
E. J. Brown, Manchester
S. G. Morrill, Concord
D. G. McIvor, Concord
J. A. Hunter, Dover
H. Scott Pattee, Manchester
W. A. Bartlett, Manchester
W. J. Russell, Manchester
F. N. Rogers, Manchester
James W. Jameson, Concord
C. W. Colby, Exeter
George M. Watson, Manchester
G. E. Hoffses, Manchester
R. G. Blanchard, Dover
W. R. Garland, Plymouth
C. S. Abbott, Laconia
A. Normandin, Laconia
P. Bergeron, Manchester
A. Alexander Macleay, Manchester
L. J. Lacasse, Manchester
Ezra Jones, Manchester

A. J. Provost, Manchester
S. L. Hebert, Manchester
J. O. Gagnon, Manchester
Ira J. Prouty, Keene
A. A. Pratte, Keene
A. H. Harriman, Laconia
V. Potvin, Claremont
D. E. Sullivan, Concord.
James A. Spalding, Portland, Me.
Thoma A. Foster, Portland, Me.
Edgar J. Thibodeau, Berlin
V. H. Sikorsky, Plaistow
F. C. Claggett, Newport
E. M. Miller, Woodsville
Fred C. Russell, Haverhill
J. B. B. Charest, Derry
F. E. Spear, Woodsville
H. L. Taylor, Portsmouth
Alfred Daudelin, Nashua
C. H. Babbitt, Nashua
Charles C. Rogers, Farmington
George R. Cusson, Berlin
T. C. Pulsifer, Berlin
Fred Fernald, Nottingham
G. W. Weymouth, Lyme
John G. W. Knowlton, Exeter
N. D. Michou, Manchester
D. P. Mocas, Nashua
D. N. Maltsis, Nashua
John T. Murray, Manchester
L. T. Togus, Manchester
J. J. Buckley, Dover
Henry Schmitz, Chicago, Ill.
George L. Bastian, Manchester
W. P. Grimes, Hillsboro
A. W. Mitchell, Epping
Luther A. Marsh, Nashua
Carroll R. Murch, Nashua
M. A. Sweeney, Nashua
A. S. Wallace, Nashua
Carleton R. Metcalf, Concord
Robert O. Blood, Concord
Arthur B. Howard, Concord
John F. Holmes, Manchester
M. A. H. Hart, Milton
M. H. Towle, Manchester
J. N. Friborg, Manchester
R. J. Osterheld, Concord
S. Fraser, New Boston
P. B. Goetschius, Manchester
F. H. Sargent, Pittsfield
Samuel J. Cogswell, Derry
J. L. McLaughlin, Farmington
J. S. Bragg, Manchester
B. G. Moran, Nashua
T. F. Rock, Nashua
R. H. Brooks, Claremont
George L. Hilton, Milford
Henry H. Dearborn, Milford
D. J. Sullivan, Manchester
L. R. Hazzard, Portsmouth
John F. Gile, Hanover
Harry T. French, Hanover
H. F. Twitchell, Portland, Me.
W. P. Clough, New London
L. C. Ager, Waterloo
O. C. Young, Charlestown
A. S. Merrill, Manchester
W. N. Souter, Portsmouth
E. W. Hodsdon, Centre Ossipee
A. W. Stearns, Billerica, Mass.
Winfred Overholser, Boston, Mass.
L. Vernon Briggs, Boston, Mass.
S. T. Ferguson, Goffstown
E. R. B. McGee, Berlin
R. W. Holmes, Keene
Charles S. Walker, Keene
J. J. Brosnahan, Keene
John Murray, Concord
A. L. MacMillan, Concord
E. Henry Thompson, Hampton
F. S. Eveleth, Concord
B. L. Freeman, Suncook
W. L. Kelso, Hillsboro
Charles H. Dolloff, Concord
F. B. Argue, Pittsfield
G. A. Weaver, Bradford, Vt.
Charlotte Stewartson Smith, Manchester
W. F. Taylor, Keene
W. H. Lacey, Keene
C. E. Congdon, Nashua
C. R. Friborg, Manchester
J. E. Larochelle, Manchester

FINANCIAL STATEMENT*

Balance, Jan. 1, 1929	$ 249.34
Hillsborough County Dues	580.00
Grafton County Dues	296.00
Merrimack County Dues	236.00
Rockingham County Dues	164.00
Strafford County Dues	136.00
Coos County Dues	132.00
Cheshire County Dues	128.00
Belknap County Dues	116.00
Sullivan County Dues	76.00
Carroll County Dues	28.00
Members not in a county society	76.00
Exhibitors, Banquet tickets Balance	700.31
Clapp-Anderson	.20
Error in balance Jan. 1	$ 127.37
	$3,045.22

1928		
Jan. 14	—Portsmouth Chamber of Commerce, Stationery, etc.	$ 14.74
Feb. 20	—Walter P. Bowers, M.D., New England Medical Council	51.30
27	—New England Journal of Medicine —copies	114.92
Mar. 5	—P. F. Casey Co.—work at Wentworth Hotel	25.00
13	—Bridge & Byron—1000 letter heads	5.50
16	—B. C. Smith, typing	1.50
28	—Fred E. Goodwin	43.20
29	—Henry G. Hayes	47.03
Apr. 2	—Eagle & Phenix Hotel Co., board, room	12.00
4	—New England Journal of Medicine —copies	114.84
12	—U. S. Post Office, Concord, N. H.	8.46
	Sentinel Printing Co	10.62
16	—Bastian Bros. Co., badges	33.06
18	—Bridge & Byron, 100 membership cards	4.75
23	—Bridge & Byron, 700 programs	32.00
30	—Trustees N. H. Medical Society	1,000.00
May 1	—B. C. Smith, typing	3.75
2	—U. S. Post Office	8.38
	B. C. Smith, multigraphing	3.25
11	—Emery M. Fitch, M.D., printing & mailing post cards	20.00
13	—John F. Holmes, luncheon at Country Club	103.75
14	—B. C. Smith, typing	1.00
16	—Bastian Bros., name bars	.70
23	—U. S. Post Office, Concord, N. H. Bal. due on stamped envelopes	10.99
26	—W. W. Bellamy, M.D., stenographer for meeting	100.74
29	—U. S. Post Office, Concord, postage	5.00
June 1	—Robert H. Brooks, M.D., tel. & tel.	10.86
30	—New England Journal of Medicine, copies of trans.	380.06

*Omitted from the earlier report because of certain amendments to be made.

July	1—D. E. Sullivan, services & expenses	192.14	Dec.	16—New England Journal	116.00
	15—Ira J. Prouty	14.50		31—D. E. Sullivan, M.D., Salary, July 1 to Dec. 31.	175.00
	18—Boston Medical & Surgical Journal	115.00			
	27—U. S. Post Office, Concord, Postage	2.00			$3,031.39
Aug.	10—Henry Schmitz	100.00			13.83
	11—B. C. Smith, typing & mailing	2.50			
Sept.	5—New England Medical Council	84.80			$3,045.22
	18—Robbins Co., engraving, medals	59.05			
	26—U. S. Post Office	3.00			

ENCEPHALITIS LETHARGICA*

BY CLARENCE O. COBURN, M.D., MANCHESTER†

I fully appreciate the prominent place this subject has held in the medical literature during the past ten years, both here in the United States and abroad, but I do not think that it has ever been presented to this society. This fact, together with the belief that it is, or has been, quite prevalent in our locality, and also owing to its very deceptive behavior it has frequently gone unrecognized, prompted me to speak on this topic today.

Perhaps it would be more fitting to use the term epidemic encephalitis rather than encephalitis lethargica, which is the name Von Economo gave to this disease in 1917, for it seems that it surely is an epidemic disease and many cases are anything but lethargic. Some authors suggest the term influenza encephalitis as it is prone to follow or occur in influenza epidemics.

Encephalitis is one of the three most important infectious neurotrophic diseases. The others are cerebrospinal meningitis, and acute poliomyelitis. It differs from these two in that its clinical signs are very complicated owing to the location of its pathology in the brain. Up to the time of the World War there is no evidence that this disease existed, and Flexner[1] believes that it could have hardly been overlooked because its manifestations are so striking and its sequelae so pronounced. My first contact with this disease was in 1921, and I have since seen in my practice and consultation, 14 cases. A few of these will be briefly described later.

The seriousness of this malady is apparent when one reads the London letter in the *Journal of the American Medical Association* of August 6, 1927, which reports 11,420 cases in England and Wales during the previous five years, and of which nearly 5,000 died. Also the London letter of August 4, 1928, *Journal of the American Medical Association,* which records a report from Dr. A. C. Parsons to the Ministry of Health stating that since 1919, 14,821 cases have been reported with 6,477 deaths, so that the mortality is about 35 to 40%. Of those who did not die, about 40% had sequelae, half of which were serious and permanent, and prevented gainful occupation or further education. Parsons states that there is probably no infectious or contagious disease in the country which produces so much consequent ill health and disablement. This same ratio holds true in the cases that I have observed. Five cases have died, five have chronic manifestations in varying severity, three have recovered, and one has been lost track of. A further analysis of these cases is interesting. Of the five dead, two died in the acute stage, one in the second relapse of the acute stage, one from Parkinson's in three years, and one from Parkinson's complicated by pneumonia, six and one-half years after the acute attack. Of those living, three have Parkinson's in varying degrees, two have residual impairments, and three are apparently well, although one case, a girl of fourteen, is slightly retarded, and one boy is of an extreme nervous temperament and very easily excited. The other is probably well.

The cause of encephalitis lethargica is still debatable and very obscure. The tendency to follow in the wake of influenza epidemics has caused Patton[2] to ask the question, "Can it be that the disease is a septicemia or bacteremia due to the influenza organism." Many others are asking the same question with apparent good reason.

Collins[3] reports that there is evidence that the disease is caused by a virus, and that the virus is identical with that found in herpes febrilis. This same view is held by many others who report the production of the disease with herpetic virus.

Freeman[4] and Evans report a neurotrophic streptococcus which they have isolated from cases dying from encephalitis, and with which they are able to produce brain lesions in monkeys and rabbits, and they think it identical with that described by Von Wiesner and also by Rosenow. Others have reported cases especially in scarlet fever, measles, and acute rheumatic fever, also after severe burns. In England and Holland many cases have been reported following smallpox vaccination, but I have seen only one case reported from this cause in this country. Probably the cases referred to complicating infectious diseases and vaccination are not true encephalitis lethargica, but are a secondary inflammation of the brain due to the prevailing condition.

*Read at the One Hundred and Thirty-Eighth Meeting of the New Hampshire Medical Society at Manchester, May 28, 1929.

†For record and address of author see "This Week's Issue," page 234.

After reviewing all these probable causes, one is inclined to agree with Flexner, who states that the etiology of epidemic encephalitis is wholly obscure, or with Neal[5], that up to the present time the etiologic agent of encephalitis lethargica has not been proved.

Although we do not know the cause, it is evident that the causative factor seems to have a distinct affinity for nervous tissue. The lesions produced are found chiefly in the mesencephalon and pons. There is cellular infiltration in the tissues and about the blood vessels, destruction of the ganglia cells, and involvement of the substantia nigra.

The clinical manifestations may be any symptoms or signs which can come from a disturbance of any function of the brain. Consequently, there are no classical symptoms in sequence which give us a definite picture, which makes the diagnosis very difficult. There are, however, some signs which seem to be fairly constant. The disease simulates, in its beginning, grippe or influenza, and Gregory[6] thinks about nine-tenths of the cases are so diagnosed in the early stages. The obscure fever, irregular in type, general malaise with headache give us this impression, but sometimes it occurs very acutely and gives an immediate picture of brain disorder. Either lethargy or marked disturbance of sleep is usually present. Ocular palsies with diplopia are quite common as are other cranial nerve palsies. These may be very slight and transient and are frequently forgotten by the patient when giving the history. Hemiplegia or monoplegia may occur at times. Myoclonia, persistent hiccough, disturbances of abdominal reflexes, polyuria, and yawning may be noticeable. Changes of personality and habits of the patient may have been noticed preceding the acute illness. The disease runs a very irregular course, and it must be remembered that any of these signs may, or may not, be apparent at the time of the examination, for they are often very slight and may disappear without being recognized. Probably the most constant and suggestive symptoms are lethargy, or restlessness and insomnia, with diplopia, and fleeting cranial nerve disturbances.

A prominent neurologist has stated to me that in cases of diplopia with a history of preceding grippe, he is always on the lookout for encephalitis. Collins states that in Sydney, Australia they have come to regard transient diplopia due to temporary palsies of the eye muscles as typical of this disease.

The acute illness may be slight or severe, and when death does not occur the acute symptoms usually subside in a few weeks. There may, however, be relapses. Usually the patient temporarily regains his former health and goes on without any reminder of his recent condition. This is the latent stage and may last for months or up to one or two years. At this time the sequelae, or more properly the lesions of the chronic stage, manifest themselves. I think, without doubt, Freeman[7] has proved that this is a continuation of the disease rather than damage done at the acute stage as in poliomyelitis. As time goes on there may be changes in disposition and retardation of mental activities.

Children with this disease oftentimes show behavior defects and criminal tendencies. Parkinsonian syndrome is very apt to develop, and oftentimes may first be detected by the position of the arm, manner of gait, or blank expression of the face. There may be respiratory disturbances and difficulty in chewing and swallowing. Sialorrhea is prone to occur. All my cases in the chronic stage have had this troublesome drooling. Mental depressions, severe muscle contractions, and myoclonia make their appearance as time goes on, producing chronic invalidism and the patient usually dies of some intercurrent infection.

In the differential diagnosis between acute poliomyelitis and encephalitis lethargica, the former is more likely to occur before Christmas, whereas the latter generally occurs in the first few months of the year. The persistence of localized signs and a spinal fluid with polynuclear cells is probably infantile, whereas the spinal fluid in cases of encephalitis lethargica usually shows an increase of the lymphocytes and an increase in sugar content.

Tuberculosis meningitis offers considerable difficulty early in the disease. An examination of the spinal fluid may help, and the diagnosis is sure if the tubercular bacillus is found or the guinea pig test is positive.

Acute cerebrospinal meningitis shows more persistent increasing symptoms with rigidity of the neck and a positive Kernig sign. This, together with the spinal fluid in which the meningococcus can be demonstrated, would rule out encephalitis lethargica. Encephalitis lethargica has been mistaken for brain abscess, as brain abscess has sometimes been mistaken for encephalitis lethargica. A definite history of middle ear disease or mastoid involvements, persistent headache with vomiting and low pulse is more indicative of brain abscess.

Botulism also has to be considered. With a history of spoiled canned meats, olives or salad dressing, vomiting with severe abdominal pains and marked increase in the polynuclear cells in the spinal fluid, together with extreme prostration and dilated pupils, will probably be sufficient evidence to make a diagnosis of botulism.

Any acute infection, especially in children, like pneumonia, scarlet fever, tonsillitis, may be mistaken for encephalitis lethargica. I have recently seen a case which proved to be a severe osteomyelitis that gave many indications of this disease. Many of the chronic progressive nerve diseases have symptoms similar, in their early stages, to encephalitis lethargica as it passes from the latent stage into the chronic condition. This may give considerable concern before the

diagnosis is arrived at. Syphilis should, of course, be ruled out from the history and examination of the blood and spinal fluid.

The differentiation of the disease from neurasthenia may require unlimited time and consideration, particularly in the mild cases without definite localized symptoms. Chronic Bright's disease and cerebral arteriosclerosis should be excluded. Multiple sclerosis and other less common diseases of the brain and cord must be considered before making a definite diagnosis of encephalitis lethargica.

In all cases the most important points in a differential diagnosis are, according to W. H. Best[8]: first, the paramount importance of obtaining a complete history; second, the multifarious modes of onset; third, to note the time of the year; fourth, realization of the fact that disturbance of sleep rhythm is second only in importance to lethargy; fifth, the importance of excluding the more common and likely affections before making a diagnosis of encephalitis lethargica. Best further states that in regard to the spinal fluid as an aid to diagnosis, that he has been disappointed, but indirectly it has been of great value in excluding other diseases.

The treatment seems to be more or less empirical, as the cause is not known. The condition should be handled like any other infectious or nervous disease, absolute rest and quiet with proper nursing are prime essentials. Salicylates, preferably in the form of acetylsalicylic acid, should be given in large doses the same as in rheumatic fever. Sedatives and anodynes are frequently required. The diet should be light and nutritious with large amounts of liquids and the elimination should receive due consideration.

Many authors report different methods and procedures for handling the disease, and they have all seemed to have had results in some cases. Z. Bercovitz[9] has used 2cc of a 5% solution of mercurochrome intraspinously. Glucose in 10% solution in amounts of 150-500cc intravenously was given by Alford[10]. He gave this daily and up to 15 doses, and supplemented it with oral administrations of one or two ounces a day indefinitely, and reports his best results were in the beginning of the disease. Lewis Ramond[11] reports the use of sodium salicylate intravenously. One gramme of this was given with two grammes of glucose and 20cc of distilled water. Patton, believing the disease a septicemia tried acriflavin intravenously giving 10cc of a one-half of one per cent. solution in normal saline solution. This was daily increased up to 25cc and in his recorded cases and three others which he cites, good results were obtained.

Freeman[12] reports the use of a serum made from the streptococcus that was isolated from encephalitis cases and thinks that definite improvement could be ascribed to its use. He also reports a case that had three relapses, first treated with encephalitis serum. At the first relapse, normal horse serum was used, antipneumococcus serum during another, and streptococcus bacterin in the last, and from the use of all obtained the same results. This, he thinks, showed that the non-specific protein effect should be strongly considered. Other treatments mentioned in the literature are blood transfusions, use of serum of convalescents, and infection with malaria or relapsing fever. Of the drugs used for the control of insomnia, delirium, and other mental symptoms, perhaps scopolamine, phenobarbital, paraldehyde, atropine, and the bromides are the best. During the latent stage all infectious processes like apical abscesses of the teeth, infected tonsils, gallbladders, and others, should be eradicated. Rest and freedom from mental excitement and worry are very essential to prevent relapses, and the patient should be frequently observed during this period. Freeman advises the use of killed bacteria from the focal infections to elevate the resistance. The chronic stage should receive due consideration and contractions and deformities should be obviated as far as possible. Children with behavior defects should probably be under special supervision or in an institution, as likewise should those who show mental deterioration. Individual symptoms, as severe obstipation, sialorrhea, troublesome neuralgias, difficult deglutition, and respiratory difficulties require special procedures. Sodium cacodylate, the iodides, scopolamine and belladonna have been recommended in this stage, but on the whole the treatment is very disappointing, for it is quite obvious that no medicine can replace the cells that have been destroyed. The multiplicity of remedies recommended in the treatment of this condition only goes to convince me that temporary symptomatic relief is all that can be hoped for.

The purpose of this paper is not to give a text book description of the disease, but to draw your attention to the fact that encephalitis lethargica is not as rare and uncommon as we believe; to point out the more characteristic symptoms and signs that may be helpful in making a diagnosis; also to review the treatment that has been used up to the present time.

In presenting the following cases I have tried to select the ones that would serve best to illustrate the points I have endeavored to cover.

CASE I.

J. B. Male. Age 58. Principal Business College. First consulted me in February, 1921. His past history was unimportant, except that he had done mental work and had had no exercise. About one week ago, he had gas in the bowels, and became very constipated, and at present has slight headache, is very nervous and cannot sleep. Light attacks of vertigo at times, twinges of sharp pain in the scalp, and some puffiness under the eyes, mornings. He thinks he has eye strain. His physical examination was negative except for blood pressure of 180-90.

The urine was 1012 with the slightest possible trace of albumin. Not being familiar with encephalitis lethargica at this time, I attributed his condition to constipation and hypertension with probable secondary kidney, and for this condition outlined his treatment. In three days, however, he showed diplopia and ptosis of both lids. He was extremely restless and had not slept. He continued about the same for over a month with other fleeting cranial nerve disturbances and some shaking of the arms. At the end of this time, symptoms began to disappear, and in another month he was up and about and soon tried to go back to work. He was unable to accomplish very much, however, because he slowly developed stooping posture, became very much retarded mentally, had the characteristic Parkinsonian position of the arms, and complained of profuse salivation. I saw him at intervals until 1928, during which time his symptoms did not seem to increase. On September 30, 1928, he developed acute lobar pneumonia and died in five days.

CASE II.

E. R. Girl, five years old.

After having whooping cough for eight weeks, from which she was apparently recovering, she suddenly became very quiet, slept considerably, and was hard to arouse at times. Her eyes were very staring, but no diplopia was observed. The temperature and pulse were continually elevated. She turned her head constantly from side to side. Gradually she was unable to feed herself on account of incoördination of the arms, and later was unable to take solid food on account of choking. This condition lasted without much change for about ten weeks, after which she gradually recovered. She began to get up, but could not walk, and was obliged to creep at first. She seemed to have difficulty in talking, and at first would repeat words or sentences that were spoken to her. I think this was due to aphasia, rather than involvement of the speech center. After about six months, she was apparently well, and when six years of age, went to school. She has since been in good health, but is a little more retarded than the average child of her age.

CASE III.

Mrs. F. C. 54. Married.

Past history not remarkable, except that her husband states that she had had a slight cold about ten days ago and would go to sleep easily in her chair. One morning after breakfast while reading a newspaper, she fell out of her chair unconscious and apparently paralyzed. Her people were sure that she had had a shock. When seen by me ten minutes later, she could not be roused and her right arm was quite limp. There was ptosis of the left lid, the pupils were equal, slightly enlarged, and reacted sluggishly. She regained consciousness in about one-half hour, but would repeatedly lapse into lethargy from which she could be aroused by persistent effort. In the afternoon she remained awake long enough to carry on some conversation. There was diplopia, and she could move her right arm with great effort. The next morning the diplopia had disappeared. She was much less lethargic, and the ptosis of the left lid was gone, but was present on the right. The temperature was about 100, and the pulse rate, 80. She gradually improved, but all the signs had not disappeared in two and one-half weeks. At the end of this time, her temperature suddenly went up to 103 and she became comatose. The improvement after this relapse was very slow. The lethargy was more pronounced, the right leg and arm were paretic. She could not sit up and her mental condition assumed that of a feeble-minded person. From this time on she was practically bedridden, and in about eight months had another acute relapse and died.

CASE IV.

Ralph F. Male. 12 years old. Student.

Father states that about one year ago boy had diphtheria, and was given diphtheria antitoxin. He had considerable temperature, was very nervous, had marked insomnia, and at times was delirious. For a short time he had double vision. The condition lasted for three months, before he was able to be up and around and go back to school. He attended school for a short time only, because he could not keep up, and did not seem to grasp the teacher's instructions, treating everything as a joke. He would laugh easily, and was non-responsive.

Later he began to have difficulty in walking, and developed stooping posture with tremor of the arms. When examined by me, he had a typical Parkinson's disease, and evidently was growing progressively worse. I had never seen a case of Parkinson's disease in a child before, and it was after considerable questioning into his previous condition that I was willing to make a diagnosis. He gradually grew worse, had constant sialorrhea, and marked muscle contraction. There was progressive emaciation from starvation, because of the difficulty in swallowing, and he died in our State Insane Hospital about two years later.

CASE V.

Michael M. Motorman on street car.

Present illness began when he had to give up work on account of drowsiness, fatigue, and blurring vision. He was treated for grippe. I saw him two weeks later in consultation. At that time, he complained of general soreness of the abdomen, and much gas. Otherwise, he did not consider himself ill. He showed diplopia and slight papillitis, and he was very much retarded and could not walk well. He was sent to a hospital where he remained for five weeks, during which time he ran a low grade fever. He was considerably retarded, and there was diminution in the activity of the muscles of the face, giving an expression of apathy. All these signs gradually disappeared, he was discharged from the hospital, and went back to work in three months. I am informed by his physician that he has since been well and active.

CASE VI.

Mary F. 63 years old. Widow.

Was always well up to April, 1925, when she contracted a severe cold which lasted six weeks, and for which she had no medical attention. This was followed by extreme nervousness, and inability to sleep. She would walk miles to get rid of the nervous feelings. About three weeks later, she had some difficulty in using her right leg, her neck seemed stiff, and her chin tended to fall on the chest. Her arms became tremulous, and she could not write, as usual. I saw her at this time. Her speech was slow, and no diplopia was made out. There was slight ptosis of the left lid, and some swelling of the feet and legs. The neck muscles were stiff, holding the head flexed, but this could be overcome by firm pressure. There was myoclonia in both arms, which were held in flexed position. Also, there was beginning flexion of the legs. Her face began to assume a mask-like expression, and there was beginning sialorrhea. All these symptoms have increased during the past three years. She is now a helpless invalid, confined to her chair. Sialorrhea is constant and very troublesome. She has great difficulty in mastication and swallowing, frequently having choking spells, and her speech cannot be understood. She has, at times, shown some improvement with the use of salicylates and scopolamine, but I have little hope for her future.

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Discussion

Dr. Benjamin W. Baker, Laconia: *Mr. President, Ladies and Gentlemen*—Dr. Dolloff is also down to discuss this paper but he wished me to make his excuses for him as he was required to go to court today.

This disease is probably the same disease as that which spread over Europe in 1712. Our present epidemic started in the fall of 1916 when war was raging; when shovels and shells were throwing up the mud over a large area; when millions of men were exhausted from nervous strain and their nervous tissues susceptible to the spread of epidemic disease.

Constantino Economo of Vienna was one of the first to identify and describe the disease and he named it encephalitis lethargica.

There is no doubt today that this is a contagious disease. There is no doubt that many patients can transmit the disease years after the acute stage.

The word "postencephalitic" is badly applied. We might as well refer to a "postsyphilitic". My old professor used to say that the first stage of syphilis was six weeks, the second stage six months and the third stage forever. The spirocheta pallida remains in the human body and years afterwards causes general paralysis of the insane in some cases. In many instances it causes relapses with a continuous variety of symptoms and in many cases produces paralysis agitans.

This disease has two stages—the acute and the chronic. In the acute stage the disease is not always diagnosticated, but the patient receives attention from the general practitioner. During the second stage the patient is a hospital or institution problem. There is no institution constituted for, nor specially adapted to care for the chronic encephalitic patient. It is hard to find any disease process which produces a more difficult patient to care for. Chronic encephalitics are sent to the Psychopathic Hospital in Boston. A private insane hospital in Philadelphia has a special ward with a regulated and graduated form of after treatment, the after treatment and re-education being the most efficacious treatment today.

Encephalitis lethargica is a disease which produces its greatest damage in the mid-brain. That part of the brain to which the highest intelligence is attributed is the least affected and as children with encephalitis retain much of their intelligence they cannot be cared for properly with the feebleminded or epileptic. They do not belong in a general hospital and should properly be grouped by themselves. It is most important that the nurse or attendant who is to care for an encephalitic patient be given as much knowledge of the disease as possible for such knowledge is necessary for intelligent, tolerant and sympathetic care, which is required to produce the best results in training and re-education of the patient.

Dr. E. O. Crossman, Washington, D. C.: It occurred to me that it might be of interest to show you a little of the end-results after ten years of the cases we had at a hospital where we now have 273, and of those 273 there are 217 totally disabled. Dr. Baker has spoken of the disease being a progressive disease, and it undoubtedly is, but at the same time the suggestion he makes concerning the mental condition we have found in the last two years is along the line of his own suggestion in that they are not tremendously deteriorated; and what we are trying to do is to get them out of the hospital and into their homes and get them under supervision of a psychiatric social worker and train them along the line of some occupation.

Dr. Coburn suggested various forms of treatment. We have found in cases of rigidity as in the patient who couldn't chew or masticate food relief to come from the use of hydrobromide of hyoscine, one hundredth of a grain, t.i.d. (subcutaneously).

It seems to me it was a good thing to have this paper read because it is on a disease which doesn't require a great deal of time and consideration, and it is a new disease to all of us, and I do not think anybody need be embarrassed if he can't make the diagnosis the first day. Many cases have come to us where the diagnosis has been delayed for weeks and months, and we can't say that the cases haven't been handled by the most experienced men in the country.

One point I was trying to bring out is the deterioration; and then in the colored hospital, venereal disease since the war wasn't as deadly to a colored man as to a white man. Most of them if you get a true history have had syphilis. I went through one hundred cases and all but three admitted venereal disease at some time in their lives, and those three lied probably. And encephalitis seems to be a more mentally deteriorating disease with those people than with the white people; and I want to suggest that in all these cases of acute infection that do not clear up right away we go slowly in making a diagnosis and reserve our diagnosis until we are sure that it isn't a case of encephalitis.

THE NEW ENGLAND JOURNAL OF MEDICINE THE OFFICIAL ORGAN OF SEVERAL SCIENTIFIC SOCIETIES

THE tendency of State Medical Journals in the United States has been, in recent years to adopt the form of monthly or semi-monthly publications.

The Massachusetts Medical Society has adhered to the policy of publishing its official organ every week and the subscribers are endorsing this custom.

This JOURNAL has been adopted by the New Hampshire Medical Society, the Vermont Medical Society, the New England Surgical Society, the New England Pediatric Society, and the New Hampshire Surgical Club as the official organ of each.

This combination of professional societies seems to emphasize the probability of continuation of this policy even under any change of ownership of the NEW ENGLAND JOURNAL OF MEDICINE. This combination of interests also warrants the use of the present title which carries the implication of broader fields and functions than would be indicated by a more restricted title.

In addition to this New England clientele, subscribers throughout the country find in this JOURNAL material of educational value.

Before the adoption of this JOURNAL by the Massachusetts Medical Society its previous owners tried to interest other New England Societies in an association designed to extend its usefulness with respect to building a publication more generally representing New England Medicine. Although interest in this plan was shown, no definite steps were taken until Dr. David Parker advocated renewed consideration of the original idea and in consequence the Massachusetts Medical Society submitted an agreement to allocate space in the JOURNAL for the publication of the proceedings of the New Hampshire Medical Society under terms which correspond as closely as possible to the actual expense of printing and stock without intending to charge a profit on the transaction. This work has been carried on and it has been found that the estimate of expense to the Massachusetts Medical Society did not quite meet the actual cost. This, however, has not changed the purpose of the Society.

Very soon Vermont followed New Hampshire, and now these three New England Societies are working harmoniously in maintaining the JOURNAL. The experiment seems to be successful.

The question still exists in the minds of physicians in other parts of New England with respect to the advantages and permanency of such associations. Fortunately there are precedents. For example, California, Nevada and Utah are working under a similar arrangement, Colorado and Wyoming in another, Oregon, Washington and Idaho in a third and Arizona, New Mexico and El Paso in a fourth. It appears to have been shown that such combinations add strength to a publication. The Massachusetts Medical Society will cordially meet any further desire for additions to the present group.

If, however, there exists in the mind of any New England physician the idea that distance between the more remote sections is an objection to the coalition, attention may be called to relative areas in other sections. All of the New England States together have an area of 66,424 square miles. California has 158,297 square miles and Texas has 265,896. One State Society Journal serves Texas and one Journal serves California, Nevada and Utah. This of course does not mean that only one Journal is taken in these States but so far as State Society publications are concerned a single Journal meets the local requirements for areas much larger than all of New England.

It is probably correct that there is less diversity of type and interest in New England, than is found in these larger states. New England people are to a large degree homogeneous in personal characteristics and standards of living and especially in professional acquirements, hence our common understanding and aspirations would seem to fit us to work together advantageously in carrying on a medical publication.

The sentiment seems to be growing in the minds of many New England physicians that a union of the Medical Societies in supporting a JOURNAL will be of advantage to all concerned. The Massachusetts Medical Society will be interested in having the other State Societies discuss the details of such arrangements as may be suggested whether they involve united ownership of the JOURNAL or an extension of the present business arrangement. There are probably no real obstacles to a merger whenever evidence of a more general desire is shown.

The present plan can be made more useful if each contributing society can arrange for taking the full yearly issue of the JOURNAL for all its members, or getting the members to pay three dollars per year in addition to the one dollar now paid by the affiliating societies.

MISCELLANY

NEW HAMPSHIRE SURGICAL CLUB

The 32nd annual meeting of the New Hampshire Surgical Club will be held at Hanover, N. H., September 9, 1929.

There will be a clinic at the Mary Hitchcock Hospital in the morning and a literary program in the afternoon followed by a banquet in the evening.

As is customary this meeting is arranged as a week-end outing for members, their families and guests. Special rates have been secured.

A committee of arrangement, consisting of the Hanover members of the New Hampshire Surgical Club with Dr. John F. Gile as chairman, is in charge.

Dr. Harry O. Chesley of Dover, N. H., has been chosen anniversary chairman.

The officers of this society are:

President, Daniel C. Norton, M. D., Manchester.

Vice President, John F. Gile, M. D., Hanover.

Secretary and Treasurer, John F. Holmes, M. D., Manchester.

Executive Committee, President, Secretary-Treasurer, Ex Officio; Carleton Metcalf, M. D., Concord; Timothy F. Rock, M. D., Nashua; A. T. Downing, M. D., Littleton.

THE DOCTOR'S WIFE

Nobody knows where the doctor goes—
Not even the doctor himself—
The ills that he treats, the troubles he meets—
There's a record on Time's long shelf.

Nobody knows the trials he has
As he journeys along through life,
His hurries and worries, his broken rest—
Except the doctor's wife.

And if she should say, "the doctor is out",—
When the doctor is resting in bed,
It is to protect him for further tasks,
And God will approve what she said!

Nobody knows the worries and cares
That come in a doctor's life,
Nobody knows the troubles he shares—
The cares of the doctor's wife.

There is strife in the life of the doctor's wife,
There is trouble and sorrows and pain,
And cares not a few; but she lives them all through
And smiles 'till the sun shines again.

And, so, she will go, down the valley of ills,
Unselfishly doing her best
A servant of love recorded above
And numbered at last with the blest.

By John F. Holmes.

BIRTHS AND DEATHS IN NEW HAMPSHIRE FOR 1928

There were in 1928, 8665 births with a .rate of 19.3 per 1000, and 6442 deaths the rate being 14.1 per 1000. Of this number of deaths 602 were under one year.

DEATHS

Dr. James B. Erskine of Tilton died at his home July 20.

Dr. Arthur J. Pitman of Manchester, N. H., died suddenly Sunday morning, July 14, 1929, of angina pectoris, aged 61 years. Dr. Pitman was born at Alexandria, N. H., and was a graduate of Dartmouth Medical College.

He practiced for many years in Candia, N. H., later moving to Manchester where he has since been in active practice even to the day before his death.

He was a man of ability, of high ideals and of strict integrity, loved and respected by all, a man whose place in the community it will be hard to fill.

THE NEW HAMPSHIRE SURGICAL CLUB

THE PHYSICIANS SERVICE BUREAU*

BY C. E. DUNBAR, M.D.†

FOR many years it has been gradually coming to the attention of the medical profession that some consideration must be paid to changes in economic conditions.

Formerly, the old family doctor went his rounds, the friend and confidant of all his families, satisfied with such payments as might be made to him unsolicited, knowing that he was loved and respected by all, and able to live fairly comfortably with small expenses about which to worry. Today, the average doctor has very few families he can call his own. The increase in the proportion of specialists, the corner drug stores, the increase in cults of various kinds,—all tend to make the average patient more of a rounder, so that the doctor is no longer able to know his patients as well nor does he have their complete confidence as did his predecessor.

Then it was considered unprofessional to send out regular statements or make much effort to collect past due accounts. Today, the high cost of living, increased overhead made necessary by the necessity of being fully equipped to meet the demands of practice, and the increased competition make us realize that conditions are different and we are gradually awakening to the fact that we must get paid for a part of our services at least.

The practice of medicine consists of two distinct departments,—the professional and the financial,—distinct yet unseparable, and helpless, one without the other. Neglect of one necessarily means unsatisfactory results with the other, without exception.

The American Medical Association now publishes a regular bulletin concerning economic conditions and also advises constituent societies to discuss economics more frequently.

Turning from the physician's side of the picture, we must admit that the public is becoming somewhat disturbed because of the increasing cost of medical attention. Olin West, Secretary of the American Medical Association, says that this is the one great outstanding question before the medical profession today. In his own words: "We must deliver adequate, scientific medical service to all the people, rich and poor, at a cost which can be reasonably met by them in their respective stations in life."

To study this problem, there has been organized a "Committee on the Cost of Medical Care" which includes 42 members of whom 23 are physicians. This committee has started on an ambitious 5 year program to study the facts, and it behooves the profession to watch developments closely.

In their preliminary report, they state that "physicians are finding themselves in an increasingly difficult position. The income of many remains low because of uncollectible bills. General practitioners are losing ground as the prestige of the specialist grows and many of them find it difficult to obtain hospital facilities."

"Many physicians do not receive sufficient income to enable them to keep abreast with the developments in scientific medicine. Their earnings are reduced by free work among clients, free work in hospitals and dispensaries, failure to charge for preventive work, and the high cost of equipment. Especially in rural communities does income appear inadequate. The fees of rural physicians for attending cases in 17 Massachusetts towns were recently ascertained, and also the current charges for a round trip to the same points made by local garages. In 5 cases the doctor charged only $2 more than the taxi cab charged for the trip alone; in one instance, the doctor charged $6 for services, including transportation, while the taxicab fee to the same town and back was $8.00. These and similar facts suggest the very definite interest of private practitioners in the committee's work."

What few other studies have been made indicate that the yearly savings of the average physician are less than $2000, which of course is a very small percentage of profit, considering the time and money invested in medical training.

WHAT can we do about it?

First we must consider what we owe our patients. We cannot expect to receive pay unless we give them intelligent, conscientious, and painstaking service; and, more than that, make the patient understand the value to himself and family of the treatment rendered. Then again, a physician harms himself and everyone else, when he makes it a practice to charge exorbitant fees. One such instance coming to the attention of the laity, creates the feeling that all doctors must be robbers and tends to drive them to the druggist or cultist.

We also must keep accurate and complete case records and records of charges.

Secondly, the patient should pay us an adequate fee for work done and the problem is to make him see this side of the question.

The first step forward is to send a statement of the account early before his gratitude has cooled, and then follow up with frequent, reg-

*Read before the Hillsborough County Medical Society, April 30, 1929.

†For record and address of author see "This Week's Issue," page 234.

ular statements. If this were done by all, the people would finally become adjusted to the fact that there is an obligation on their part, and that the doctor must be paid as well as the butcher, the baker and the candlestick maker.

However, we find that there is a large class of rounders, people who go from one doctor to another with little intention of paying any, who begin to feel Dr. Blank is a personal enemy as soon as a bill is sent, and then feel it their duty to tell the world that Dr. Blank is a quack.

To eliminate this class, many have employed regular collection agencies or commercial credit bureaus; but these have been found unsatisfactory for many reasons, the latter especially because the credit problems of the butcher, etc. are different from those of the medical profession. The man who prides himself on paying regularly his routine bills for rent and groceries may feel that the doctor is rich and can wait for a tomorrow that never comes.

Accordingly many medical associations, particularly in the middle west, have formed Credit Bureaus of their own with the idea of listing all persons in their communities,—classifying them in various ways,—in general trying to distinguish between the honest poor who deserve free treatment and the undeserving poor,—between those willing to pay their just debts and those anxious to escape all obligations,—between the good credit risk and the dead beat. Such listings work a hardship on no deserving person, but save the busy physician much needless worry. With the credit experiences of all other doctors in the community available for his inspection, he does not refuse a worthy charity case nor trouble himself with the dead beat; unless he wishes to, on a *cash* basis.

As soon as the people learn that the profession expects to be paid, it will gradually become the natural thing for them to expect to pay.

These Medical Credit Bureaus have been a pronounced success in many places, but in a few instances have failed because of a lack of spirit of co-öperation among the physicians themselves. As a whole, we probably are rather conservative and it is difficult for us to understand the potentialities of a comparatively new system of this kind, so that in every bureau, it has been found that only a small proportion of the members take full advantage of its privileges.

If every member of a local society were to join and co-öperate full heartedly, there is no question but what every credit bureau would be a definite success.

It would be interesting to consider the detail or organization of many such bureaus, but lack of time makes it necessary to limit ourselves to a survey of a few particular features only.

In general, the Bureaus have two main functions:—the first and most important being to gather and classify credit information for the use of the members; and the second, to collect such old accounts as the members desire. Some also run a loan department, and others maintain a permanent office as a sort of information bureau on all medical matters.

It is thought that collections are handled somewhat more easily by an association bureau than by private agencies but all managers report that the percentage of collectible accounts more than six months old is disappointing. However, this department is a great aid in that it gives the agents of the bureau first hand knowledge of a large proportion of the population.

Some bureaus are formed as stock companies, and some gain their revenue from yearly dues and collection fees. The price of a share of stock is from $25 to $75 and yearly dues run from $10 to $50. One bureau may prefer to have low yearly dues and high collection fees while another may choose to keep the collection fees low. The large bureaus have a manager and a force of clerks and collectors, but a small bureau may be operated by one individual. Some are little more than collection agencies while others find many ways to serve the economic interests of the members. Some are for physicians only; others include dentists, druggists, and hospitals.

Credit bureaus might also be of use to the members in legal relations, and in dealings with insurance companies, druggists, and nurses registries in many ways that suggest themselves.

In Manchester, our local society established a Credit Bureau in the summer of 1927. This is controlled by a committee of three members from the society and operated by a lay manager who employs such legal and clerical assistance as he finds necessary from time to time. We now have a fairly complete file of credit ratings which has proved itself of great value to those making use of it. Many instances showing its value could be cited.

The pooling of old accounts in the hands of one agent also appears to have resulted in collections in cases that seemed impossible. Many individuals have been brought to realize that it is advantageous to them to have a good credit rating with the physicians as well as with the merchants. On the whole, we think that our bureau has been a success and we hope for greater progress in the future.

In order to give you some idea of the details of our organization, it might be of interest to include excerpts from our Constitution:

Article I. Name.

This organization shall be known as The Physicians Service Bureau of the Manchester Medical Association, Inc.

Article II. Object.

The object of this organization shall be the advancement of the economic interests of its members.

Article III. Membership.

Any member in good standing in the Manchester Medical Association, Inc., may be admitted to membership in the Bureau upon paying the required fees.

Article IV. Officers

A. The Officers shall be accountable to the Manchester Medical Association, Inc. in all matters relative to the management of the Bureau.

D. It shall be the duty of the Manager:

(1) to provide the necessary files.

(2) to collect and file such credit information as may be of interest to the members.

(3) to be able to report at any time, by mail or telephone as requested, upon the credit standing of any individual.

(4) to supply each member at regular intervals with a report on credit conditions.

(5) to take for collection such accounts as the members may give him.

(6) to keep absolutely confidential all information coming to him as manager, filing information furnished by members under numbers rather than names of members, never revealing to any member the name of any other member furnishing information. This shall not be so construed as to forbid the furnishing of members with consolidated lists, or with information gained from outside sources.

(7) to advance the economic interests of the members in every way possible.

In conclusion, looking into the future, the writer would like to see organized a state service bureau with branches in every community. This state-wide organization could be operated by a full-time salaried manager who could make himself useful to the profession in all legal and economic matters.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 15311

PAIN IN THE LEFT AXILLA

MEDICAL DEPARTMENT

A Russian Jewish farmer fifty-two years old entered January 30 complaining of pain in the left side of the chest of four months' duration.

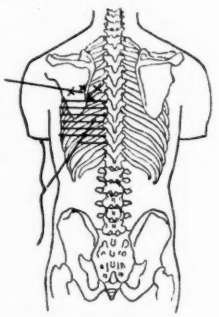
He gave a rather vague history. Five or six years before admission he cut his right hand and had severe infection of his whole hand with edema of the arm. This drained pus for seventeen weeks. He lost one finger. During this infection he developed hiccups, and ever since had had periods of hiccup for five or ten minutes almost every day. Finally the infection subsided and his health was good until seven months before admission. Then he began to have "rheumatic lumbago",—pain in his back and down his right leg only when he walked. He did not associate this with the main illness, which he dated from four months ago, with onset of pain underneath the left costal margin which still persisted, occurring at any time, without relation to meals or respiration. It lasted from one to three hours, was not severe, and did not radiate except to a small area in his left flank. Coughing aggravated it. He continued working. Two months before admission he had a violent chill one night lasting an hour. Then he began having night sweats. He lost appetite and became so weak that he had been unable to work. For a month he had had cough, particularly on lying down, seldom productive. The day before admission he raised a little blood-tinged sputum. The sputum was never foul. In two months he had lost fifteen to twenty pounds. He had urinated once at night for years.

There is no history of familial disease.

He had typhoid fever at thirty-eight, influenza at forty-two.

Clinical examination showed a well nourished man. Teeth in very bad condition. Marked pyorrhea. Apex impulse of the heart seen and felt in the 5th space, 9 cm. to the left of midsternum in the midclavicular line. No enlargement to percussion. Sounds and action normal. A systolic murmur at the apex. Blood pressure 135/80. Lung signs as shown in the diagram. The rest of the examination was negative.

Urine before operation: 30 to 110 ounces. specific gravity 1.014 to 1.024, the slightest possible trace of albumin at one of ten examinations, a few to occasional leukocytes in six specimens of sediment, including a catheter specimen, which also showed many bacteria. The catheter urine was 12 ounces of clear fluid, not residual. Culture, no growth. Renal function 50 per cent. Blood before operation: 9,200 to 12,100 leukocytes, 72 per cent. polymorphonuclears, hemoglobin 72 per cent., reds 5,000,000,



smear normal. Hinton negative. A blood culture February 7 showed a very tiny Gram-positive coccus somewhat elongated in its longitudinal axis. Non-protein nitrogen 25.

Before operation temperature 97.4° to 102.1°, pulse 72 to 120, respirations 19 to 31.

X-ray showed the diaphragm high on the left side. Its outline was rather indistinct and its respiratory movements were absent. The costophrenic sinus was hazy. The lung fields were clear. The hilus shadows were only moderately increased. The size and shape of the heart shadow appeared within normal limits. The appearance was more suggestive of a process immediately below the diaphragm than of one above it. On February 4 the kidney outlines were indistinct on both sides. The lower half of the left kidney was fairly well shown. It appeared to be low. There were no visible stones. At examinations on the two following days the kidney outlines were not visible on either side.

February 9 the visiting physician thought the area of dullness at the left base suggestive of kidney enlargement, and thought it did not seem due to splenic enlargement or lymphoblastoma. The left lobe of the liver was not enlarged. February 15 examination after transfer to the Urological Service showed on the left side at the level of the umbilicus a mass, not freely movable but moving somewhat with respiration, not tender at the tip but with a point of tenderness two inches above, possibly the kidney. The distance between the 12th rib and the iliac crest was very small.

February 19 cystoscopy was done, and a pyelogram which showed the kidney probably normal but pushed down by something above it. February 22 a barium enema showed no defects or evidence of displacement. The left diaphragm seemed high. Its outline was distinct. Respir-

atory motion was absent. The patient then remembered being struck by a plow handle in the left side the summer before admission.

March 2 operation was done. The patient made a fair recovery from anesthesia, but the next day developed what seemed to be pneumonia, although there were no definite signs in the chest. He had tracheal râles and labored though not rapid breathing. The temperature was 101°, the pulse 115. The wound seemed to be in good condition. There was a very little purulent material and much serous discharge from the wound. He had distention, relieved by an enema. By March 6 his temperature was down nearly to normal. A medical consultant could find no definite signs of pneumonia. The serous and purulent discharge continued. Culture from the fluid showed no growth. The patient continued to run a septic temperature. He developed a small bed sore. March 19 a front tooth was pulled at his request. Two days later the wound was oozing serum in two places. The catheter was irrigated March 24 and 28 and some débris washed out. April 4 in irrigating the catheter a small abscess was broken into and an ounce of pus obtained. April 8 600 c.c. of blood was transfused. The same day a medical consultant found limitation of movement of the left chest. The breath sounds over the left front were diminished in intensity. There was retraction of the anterior intercostal spaces. In the axilla there was dullness nearly to the top and posteriorly dullness from the spine of the scapula to the base. The breath sounds were greatly diminished over all this area. The apex of the heart could not be found. Fluoroscopy showed that there was still an extensive area of dullness obscuring the left base. There was also pronounced thickening of the left lobar septum. The top of the drainage tube was thought to be at the level of the tenth rib posteriorly.

April 10 a second operation was done. The patient made a good recovery from anesthesia and felt fairly well two days later, though he coughed a good deal. April 15 a third operation was done. The septic temperature and drainage continued. April 19 and 25 the X-ray findings in the chest were the same as previously. April 21 and 24 considerable necrotic material was spooned out from the wound. The next day the patient had a good deal of respiratory difficulty. A chest tap removed 7 ounces of slightly turbid yellow fluid. The procedure was stopped here because of the patient's great fatigue. He had marked edema of the feet. A culture from the wound showed colon bacillus, enterococcus and bacillus pyocyaneus. May 2 the breathing was rapid and shallow. The chest was again full of fluid. Four ounces of pus was released from the wound. Twenty-four ounces of almost clear yellow fluid was removed by chest tap. The feet were markedly swollen. May 5 spooning out the wound started a hemorrhage which stopped the next day. The tube was removed and the sinus irrigated with a catheter.

May 10 the patient had a chill and went into shock. The chest was tapped with the removal of eight ounces of fluid with no relief of the dyspnea. He had pain in the region of the wounds, but probing released no pus. A portable X-ray film showed extensive dullness on the left, but the films were not sufficiently good to warrant any conclusions. 300 c.c. of blood were transfused that night. The blood pressure was 85. May 11 the patient died.

Discussion

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

The fascinating part of our profession is that we are always getting something new. I never saw a case like this. I never saw anyone who had hiccups like that. Either he lied or this is a new symptom. I cannot see how it could have any important relation to the present illness or cause of death. People do die of hiccups, but not with a picture like this.

Presumably the night sweats were from the same cause as the chill, some infection.

Up to the clinical examination I do not know the diagnosis. Of course we think of tuberculosis. Typhoid ought to be considered. There is nothing else in my mind so far.

NOTES ON THE PHYSICAL EXAMINATION

The heart is normal.

What do the lung signs mean? Fluid is the first thing we ought to think of. What kind of fluid? It might be serous, but it is more likely to be pus, especially with the chill and the night sweats. He might have all that with serous pleurisy; but I am judging by the fact that he died, and trying to think of something that will kill him. Ordinary pleurisy never killed anybody. My guess up to date is empyema. There is a possibility that the diaphragm is pushed up over something, perhaps the kidney, perhaps abscess of the kidney. The trouble may all be below the diaphragm. A perinephric abscess would give just these signs if the diaphragm were above them. It is a thing to bear in mind when you have only the chest diseases in mind. With night sweats there can be abdominal possibilities as well as chest possibilities.

He had normal kidneys. There is nothing about the urine that is not normal. The renal function is very large. If he has disease in his kidneys it does not show at the clinical examination.

I am not acquainted with any such organism as this elongated Gram-positive coccus.

Dr. Tracy B. Mallory: It was probably contamination.

Dr. Cabot: We have here a four-hourly chart. If it were an ordinary 9 a. m. and 5 p. m.

chart it would look like a regular picket fence temperature, a septic type of temperature in other words, not like typhoid at all. We are looking for sepsis, looking for pus somewhere.

What I guess is that all that is shown in the X-rays was below the diaphragm. There is something wrong near the kidney.

The pyelogram, however, shows a normal kidney.

There is no evidence of anything wrong in the colon.

DIFFERENTIAL DIAGNOSIS

I will venture to say that they did not make a pre-operative diagnosis they were at all sure of. They probably did something in the nature of an exploratory operation for something near the kidney, possibly hypernephroma, possibly tumor of that region and possibly perinephric abscess. I cannot think of anything else.

A PHYSICIAN: Was it possibly abscess of the spleen?

DR. CABOT: That is rare, and usually a complication of septic emboli from the heart or elsewhere. Without some such source as that I should hesitate to make a diagnosis of abscess of the spleen.

A PHYSICIAN: His pain lasted three hours. Could he have had a discharge of pus that would relieve him of some pain?

DR. CABOT: I do not see that that helps me to make a diagnosis.

We are in doubt between sepsis and tumor. On the whole sepsis is more probable on the basis of the facts, but tumor cannot be excluded. Suppuration near the kidney seems more probable than tumor of the kidney, but I cannot say more than that.

PRE-OPERATIVE DIAGNOSIS

Subdiaphragmatic abscess.
Abscess of the spleen.

FIRST OPERATION, MARCH 2, 1929

Before operation the edge of the spleen could be felt in the flank at the costal margin. There was tenderness at this point on pressure and also tenderness and spasm in the epigastrium to the left of the median line. The area of splenic dullness was enlarged.

The abdomen was opened through a transverse incision at the left of the umbilicus, and the spleen found to be enlarged to about three times normal size. It was adherent to the diaphragm and the liver at the upper pole, and adherent posteriorly half way down to the lower pole. The internal surface of the spleen was tense and bulging and gave a sensation of fluctuation. The enlargement was mostly confined to the upper part of the spleen, apparently inflammatory in character. The pancreas was thickened and boggy throughout its full extent, and when exposed through an incision in the transverse mesocolon appeared to be inflammatory in character. In the presence of the pancreatitis and with the adherent spleen, which probably contained a large amount of pus, it was not deemed wise to attempt a splenectomy. After using an exploratory needle through which pus was drawn from within the spleen, an incision was made through the splenic substance on the internal surface at about the lower level of the hilum. This opened an abscess which contained 20 ounces of pus. Within the abscess fragments of necrotic splenic tissue could be felt. The abscess in the spleen was drained with one large rubber tube about it. The omentum was stitched to isolate the opening from the abdominal cavity.

SECOND OPERATION, APRIL 10

Resection of part of a left rib under local novocain as a part of first stage drainage of possible subdiaphragmatic abscess.

THIRD OPERATION

Second stage of drainage of subdiaphragmatic region under gas-oxygen anesthesia.

FURTHER DISCUSSION

DR. CABOT: I should say that subdiaphragmatic abscess was a natural consequence from his abscess of the spleen. It spread through the diaphragm, as it often does, so he had an empyema on top of the other and died of sepsis from those things.

A PHYSICIAN: How did he get abscess of the spleen?

DR. CABOT: I shall be interested to see if the necropsy shows the source of that abscess of the spleen. The spleen was large, but I do not know why.

A PHYSICIAN: Do you believe now that he had hiccups?

DR. CABOT: That is rather a good suggestion, —chronic splenitis, something attached the spleen to the diaphragm, and that kept him hiccuping. It is a good suggestion. I had not thought of it.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Splenic abscess.
Pneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Abscess near the kidney.
Secondary subdiaphragmatic abscess?
Empyema.
Sepsis.

ANATOMIC DIAGNOSES

1. *Primary disease.*
   Lymphosarcoma of spleen and stomach.
2. *Secondary or terminal lesions.*
   Abscess within tumor of spleen.
   Hydrothorax, bilateral.

DR. MALLORY: This patient had in one sense of the term a splenic abscess, though really the abscess was confined to the inside of a tumor which was itself in the spleen, the tumor being a lymphoma. At the time of autopsy, which was nearly a month after operation, it had grown to much greater size than that mentioned in the operative description. The tumor was 10 to 12 centimeters in diameter, with still healthy living tissue at the periphery and at the center a mass of necrosis and pus. There was also lymphomatous involvement of the stomach with secondary ulceration at that point. The pleural cavities showed large amounts of fluid on both sides, 2,000 cubic centimeters on the left, 500 cubic centimeters on the right, only slightly turbid, not frank pus at all.

The other organs were entirely negative.

DR. CABOT: No lymphoma except in the spleen and stomach? Isn't that a rare association?

DR. MALLORY: It is a little unusual, but of course both spleen and stomach are relatively frequent places for lymphomatous involvement, after the peripheral lymph nodes.

DR. CABOT: Now we know where he got the abscess of the spleen. I should never have guessed it, because I have never seen a case parallel to this.

A PHYSICIAN: I do not understand what he had in his stomach.

DR. MALLORY: He had diffuse lymphomatous infiltration of his stomach, with numerous secondary ulcerations.

A PHYSICIAN: How long could he have had that?

DR. MALLORY: It was a matter of months certainly; I doubt if it was years. I do not believe it caused six years of hiccups. Malignant lymphoma,—lymphoblastoma is the term we use here,—of this particular type is quite different histologically from Hodgkin's disease. It is not that type of process. It comes nearer perhaps being what is called lymphosarcoma.

A PHYSICIAN: What do you consider was the primary source, the stomach or the spleen?

DR. MALLORY: At the time of operation nothing was felt in the stomach, but the infiltration is very diffuse in these cases. It might not be easy to feel from the outside.

DR. CABOT: The chief lesson is in the rare diagnosis, which none of us made. At the onset most of us would have said that the trouble was in the chest, where it was not at that time, but already in the abdomen.

CASE 15312

SUDDEN COLLAPSE ON EXCESSIVELY HOT DAY; DEATH AFTER TWENTY-FOUR HOURS IN COMA

MEDICAL DEPARTMENT

A Swedish carpenter of forty-seven went to work on June 7 feeling as well as usual. It was an extremely hot day, the official temperature being 94 degrees in the shade. The patient was engaged in working on the outside of a house and was in the sun most of the time. About noontime he suddenly felt weak and dizzy and was forced to sit down. In a few minutes he vomited. He had to be assisted home a few blocks distant and was put to bed. The local doctor was called at once and found him to be in a state of collapse. He was still conscious but very weak and bathed in cold perspiration. His mouth temperature was 94 degrees and his blood pressure 90 systolic and 50 diastolic. The pulse was observed to be weak and irregular but slow.

In the evening he became somewhat stuporous, and during the night passed into gradually deepening coma. The next morning he could not be roused. Frequent observations of temperature and pulse were made by the nurse, his temperature remaining subnormal and his pulse 80 to 90 until nine o'clock in the morning, when his temperature suddenly went up to 104 and his pulse to 150.

He had always been a strong, robust man. His family could remember no serious illnesses. He was married and had two healthy grown children.

Examination at quarter past twelve p. m. June 8 showed a large muscular middle-aged man obviously moribund, very cyanotic, in deep coma. The breathing was stertorous, shallow, and slow. Turning his head on one side freed the air passages sufficiently so that cyanosis disappeared from the face. It remained however in the fingers. The skin felt very hot. It was neither moist nor very dry. The temperature one hour before examination was 104°, the pulse 160, regular, the respirations 16, the blood pressure 142/80. The pupils were equal, slightly irregular; no reactions could be obtained. Fundi: the disc margins appeared slightly blurred; the vessels appeared normal: no hemorrhage or exudate. Mouth negative. Thyroid and glands normal. Heart normal in size, action very rapid but regular, sounds of good quality, no murmurs. Lungs, no dullness. The breath sounds were obscured by the stertorous breathing. Abdomen negative except for dullness extending three inches above the pubic crest, thought to be due to a distended bladder. Reflexes: knee jerks and other reflexes were not obtainable. No response on plantar stimulation.

Laboratory data. Urine: high colored, clear, specific gravity 1.034, albumin 0.10 per cent (equals a slight trace), sugar—1.5 per cent, sediment negative; diacetic acid, slight reaction; acetone moderate reaction. Blood: hemoglobin 90 per cent, reds 5,880,000, leukocytes 18,000; non-protein nitrogen 37 milligrams per 100 cubic centimeters; carbon dioxide combining power 32 volumes per cent. Wassermann negative.

While the patient was being catheterized to

obtain a specimen the respiration stopped. Brief artificial respiration was employed, after which a few spontaneous irregular respirations occurred. The heart continued to beat for several minutes after respiration ceased. Death occurred about five minutes to one p. m.

Discussion

BY JAMES H. TOWNSEND, M.D.

The chief interest in this case centers about the cause of the sudden collapse and coma and its relation to the sugar and acetone bodies in the urine. Clinically the patient did not present the picture of diabetic coma. There was no hyperpnea such as is present in diabetic coma almost up to the last breath. The patient's mouth and skin were not excessively dry. The eyeballs were not soft. Furthermore, it would be very unusual for diabetic coma in an adult to come on so suddenly without any previous warning symptoms. When we examine the laboratory data closely and note that the blood sugar was only 200 milligrams per 100 cubic centimeters and the carbon dioxide combining power was reduced only to 32 volumes per cent, I think we must conclude that diabetic coma was not the cause of the death. While there was some degree of acidosis and of hyperglycemia the changes were not of the degree found in coma.

If the death was not a diabetic one, then what lesion will explain the symptoms and the laboratory findings? Could "heat prostration" or "insolation" have been responsible for the whole thing? It was one of the hottest days of the season, and the patient had been working in the sun. The clinical picture of collapse, with low blood pressure, low temperature, and feeble irregular pulse is certainly consistent with the description of one form of insolation described in the text books, and I think it is entirely possible to account for his symptoms on this basis. The terminal rise of temperature can be attributed to a disturbance of the heat regulating center without any bacterial invasion being present. There may have been a terminal septicemia. The hyperglycemia could be due to cerebral injury of the type found in injury in the neighborhood of the fourth ventricle, and the acidosis could be due to vomiting and starvation. It is however unusual for a strong man of this age to die of heat prostration. Post-mortem examinations have usually demonstrated some other pathology.

Could this patient have died a cardiac death? The picture certainly does not correspond with the congestive type of heart failure, but does resemble to some extent the picture found in coronary thrombosis. The collapse, vomiting, low blood pressure, profuse perspiration and weak irregular pulse could all be accounted for on this basis. It would be very unusual however to find a patient with coronary thrombosis growing worse while his blood pressure was rising to 140 millimeters. In this condition a rising blood pressure corresponds with an improvement in the general condition. Furthermore, there was no history of pain and no evidence of arteriosclerosis.

A cerebral lesion of some sort must be considered the most likely diagnosis. This could be a hemorrhage in some part not giving localized paralysis, or it might be due to a tumor. Such sudden changes often represent hemorrhage into a tumor. The hyperglycemia can be accounted for on the basis of cerebral injury. The blurring of the optic discs also fits well with this diagnosis. The terminal rise of temperature may be a part of the picture. Whether the heat of the day had anything to do with the situation is difficult to say. Possible it might have a precipitation cause.

Clinical Diagnosis (from hospital record)

Cerebral hemorrhage.
Possibly heat prostration.

Anatomic Diagnosis

Acute cerebellar hemorrhage.
Arteriosclerosis.

Dr. Tracy B. Mallory: Post-mortem examination showed that the essential lesion was a hemorrhage and softening in the posterior third of the left cerebellar lobe. For a fresh hemorrhage, the area was unusually sharply limited and there was no infiltration of blood into the subarachnoid space. The right lobe of the cerebellum showed a slight pressure cone as evidence that it had been forced part way into the foramen magnum by increase of the cerebrospinal pressure beneath the tentorium. The meninges were clear and the larger vessels showed no marked degree of arteriosclerosis.

Microscopic examination showed the usual appearances of fresh hemorrhage and softening and confirmed the gross impression that no tumor was present. On the borders of the lesion and also in other parts of the brain an occasional small artery showed a perivascular collection of lymphocytes. The other organs were essentially negative except for the left coronary artery, where a calcified plaque was found which considerably narrowed but did not occlude the vessel.

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BOSTON CITY HOSPITAL

THE special board appointed by Mayor Nichols to make a survey of the administration of the Boston City Hospital has finally made its report, dated June 15. The board consisted of three well known experts in hospital administration: Dr. Frederic A. Washburn, director of the Massachusetts General Hospital; Dr. Joseph B. Howland of the Peter Bent Brigham Hospital, and Dr. Haven Emerson of Columbia University, and their recommendations, in the main, cannot fail to be accepted.

It must be understood primarily that this board found the City Hospital to be "an excellent public institution well deserving the affection and confidence in which it is held by the public and the medical profession of Boston generally," but suffering from over-rapid expansion with which its present administrative organization had been unable to keep pace.

Its recommendations, in brief, are as follows:

No increase in the size of the main hospital beyond 2000 beds.

Substantial reconstruction and re-equipment of the South Department.

Abandonment, as soon as possible, of the East Boston Station.

Replacement of the Dorchester Convalescent Home with one at the West Roxbury site.

Continuance of the Haymarket Relief Station and of the Long Island Hospital for chronic invalids, but with no increase in the latter.

The construction of a hospital for chronic sick in the immediate vicinity of the general hospital.

Immediate correction of inadequacies in service and space.

An adequate standard ratio of nurses to patients.

Adequate payment of the administrative personnel, with sufficient security of tenure of office.

From the administrative point of view the board recommends an increase in the number of trustees from five to nine, the creation of the position of a medical director of hospitals, and the creation of the positions of superintendents of each of the units.

It seems obvious, from this report, that the institution has been suffering mainly from an inadequacy of administrative organization to take care of its great size and the diversity of its activities. The splitting up of the hospital and its branches into logical units, each with its own superintendent, all being responsible to a general director of hospitals would seem to be the best way of effecting detailed, yet centralized control. We trust that the hospital may be kept free from political entanglements and that these recommendations may be speedily put into operation.

DIGESTION AND THE EMOTIONS

THE *Monthly Bulletin of the Boston Health Department*, which always chooses wisely its topics for discussion, last month contained a valuable little essay on Mental Status and Nutrition. The material for this was drawn partly from Professor Cannon's lecture at the annual meeting of the Massachusetts Medical Society in Worcester last year, partly from Dr. W. C. Alvarez's paper in the April 13, 1929 number of the *Journal of the American Medical Association*, and partly from the author's own common sense.

It is simple and apparently logical to assume that various digestive disturbances are due to improper or contaminated food. Often, however, it is not the food that is at fault, or even the digestive organs, from an organic standpoint; much "indigestion" may be due to a functionally deranged digestive tract.

Dr. Cannon long ago pointed out the effects of the emotions on physiologic activities, particularly as they may stimulate certain secretions and inhibit others. We are all familiar with the loss of appetite and frequently diarrhea which may result from even minor emotional disturbances. We are familiar with pains

of hunger, with the increased digestive comfort which accompanies good appetite, and with the disturbances of digestion which may result from fatigue alone. Familiar as we are with these phenomena, we are apt to lose sight of them, or to fail to analyze them properly.

The mistake is often made, on the other hand, of dismissing easily as "nervous indigestion" symptoms which may be due to serious organic pathology, and which should be regarded as danger signals.

The rôle of the emotions should be appreciated, but disorders should not be classed as functional until every effort has been made, to the best of our ability, to exclude organic disease.

THAYER'S ARROW STRIKES A MARK

THE edged steel of Dr. Thayer's remarks at Portland, as might be expected, struck fire from the flint of the general secretary of the Methodist Board of Temperance, Prohibition and Public Morals, Dr. Clarence True Wilson. Dr. Thayer, it will be remembered, criticized government over-regulation, particularly as it applied to the restrictions imposed by Congress on the right of the physician to prescribe alcohol for medicinal purposes.

Dr. Wilson has now publicly attacked Dr. Thayer, declaring that "dragging the legal and political question of prohibition into an annual address before the Medical Association is a questionable proceeding, unpatriotic and out of taste."

It is a relief to us in the hinterland to learn that the House of Delegates leaped to the defence of Dr. Thayer; also that Dr. Thayer was perfectly able to take care of himself.

It fills us with a feeling of great confidence, also, to know what Dr. Wilson considers out of taste for an officer of the Medical Association. We know now that religious boards will not express themselves on the subject of prohibition and will do no political lobbying in its behalf.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

ROOT, HOWARD F. A.B., M. D. Harvard 1919. Associate in Medicine, Peter Bent Brigham Hospital and Palmer Memorial Hospital. Assistant Physician, New England Deaconess Hospital. His subject is: "Insulin Resistance and Bronze Diabetes." Page 201. Address: 81 Bay State Road, Boston.

DRURY, DANA W. M.D. Harvard 1904. F.A.C.S. Surgeon, Otolaryngology, Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital. His subject is: "Chronic Deafness. An Endocrine Study of a Thousand Case Histories." Page 206. Address: 416 Marlborough St., Boston.

COBURN, CLARENCE O. M.D. Tufts 1906. Visiting Physician, Elliot Hospital, Manchester, N. H. and Masonic and Gale Homes, Manchester, N. H. Medical Director, Balch Hospital, Manchester, N. H. Consulting Physician, Hillsborough Hospital. His subject is: "Encephalitis Lethargica." Page 218. Address: Manchester, N. H.

DUNBAR, C. E. A.B., M.D. Dartmouth Medical School 1912. Member of Medical Staff, Elliot Hospital. President, Manchester Medical Association, Inc. He writes on "The Physicians Service Bureau." Page 225. Address 913 Elm St., Manchester, N. H.

THE DOCTOR'S SADDLE BAG

ON VARIOUS PROHIBITIONS

THE retiring President of the American Medical Association was resolute and courageous in his protest against the bureaucracy of government in this country. No one listening to or reading his speech could fail to appreciate his stand on prohibition, at least so far as it affects the medical profession. A group of individuals to whom has been entrusted the care of the sick and the preservation of health, finds itself in the paradoxical situation of being dominated in its professional activities by a body of laymen who, without special knowledge of the facts, has arbitrarily dictated how often and in what doses a certain remedy shall be prescribed.

Many physicians do not prescribe alcoholic spirits; some do not use antitoxin or vaccinate against smallpox; a few do not believe in pasteurization and there are many who, no doubt through neglect of their opportunities, do not know which side of a mustard plaster should be applied to the human frame. Whether or not a supposed therapeutic or preventive agent is justly so regarded—and personally I believe in antitoxin, vaccination and pasteurization, and have a great respect for mustard plasters—is beside the point. It matters not whether I believe that whiskey should be taken internally or externally, gargled or left alone entirely. Congress has ruled that it is a medicine, that it can be prescribed only by the medical profession, and that the medical profession must not use its judgment in prescribing it. " 'I looked him up and I looked him down' ", as the mate of the whaler 'Mozambique' said, " 'and all I want from you', sez I, 'is ceevility, and dam little of that.' " Independence Day, so-called, having but recently passed, one is reminded of the father who brought his little boy firecrackers and proceeded to set them off himself.

There is a definite sharp trend back towards the oppressive days of Puritanical tyranny. He that putteth his neighbor into the stocks shall

inherit the kingdom of Heaven. The happy millenium, in the minds of officialdom, is the Golden Age when half the world shall be set to watching the other half. It will be, of course, a full time job, income tax exempt, paid for by the watched half.

I do not really believe that discriminatory legislation was intended when a many-headed, if single-minded Cerberus was set to watch over the doctor's right to treat his patient, either in the prescription of alcoholic spirits or in the matter of narcotic drugs. Certainly, however, whoever reads, each June, the ominous message with penalty implied which issues forth with narcotic permits cannot be easily convinced that a paternal and benign government is guarding his interests. The doctor who innocently believes that it is his right and his duty to prescribe or dispense codeine to a patient with pneumonia is made, willy nilly, a *particeps criminis* in the opium traffic if he neglects or forgets to file his registration papers on time; if he fullfills his obligation he is forced into the position of being an unwilling narcotic law enforcement officer, and is made to pay for that privilege! This, to me—and I may be alone in the belief, although I doubt it— is one of the injustices of a government of, for and by the people, that the physician alone, of all private individuals, should pay an extra share of the cost of narcotic control and should be subject to penalty and humiliation if he errs in the technique of satisfying the meticulous requirements of officialdom.

The control of other people's actions begets a state of mind which is without parallel in human psychology. I should say, perhaps, the control by narrow gauge individuals of the activities of other individuals, regardless of their gauge. It is a bullying attitude, indulged in only by little people, and only when they have protection in their bullying. The traffic officer bullies the motorist, whether he be butcher, baker or candlestick maker, because he has the law behind him. So it is with many of the acts of officialdom. A law has been created, whether wisely or unwisely, and its enforcement—the police power of the State or the Government—is put into the hands of those who are unwilling, or unable, or not allowed to exercise discriminatory judgment. Personally I believe—and there are many who will disagree with me, although on the other hand there may be some who think as I do—that there are too many laws. The making of laws has become a consuming passion which few legislators are able to withstand.

We must hope for the best. There may come a time, even in a republic, when it will be realized that the individual has rights regarding his own conduct which should be respected, providing they do not conflict too sharply with the rights of others. This, after all, is the basis of all morally legitimate laws. They are designed for the protection rather than the subjection of personal liberty. Law, in the last analysis, under a republican form of government, is the essence of public opinion. It is an attempt to render public opinion articulate and to put force behind it. Public opinion, however, is often difficult to interpret and to express clearly. "Thou shalt not steal" is the clear voice of public opinion and permits of no other interpretation than that the body politic is firmly against stealing. "If thou purchaseth liquid refreshment containing over one half of one per cent. of alcohol, thou shalt spend five years in jail" is another matter. There is serious doubt whether this represents the true opinion of the majority or the concerted vociferation of a small group of wilful minded citizens. I cannot believe—and I am sure others will agree with me—that such legislation is the correct interpretation of public opinion. Legislation which is not the voice of public opinion is unfortunately apt to be disregarded, and universal disregard of any law is a grave menace to law in general. The citizenship of a nation cannot be broken to the whip and there is danger, I believe, in attempting it.

MISCELLANY

NORTH SHORE BABIES' HOSPITAL

Many extensive improvements have been made at the North Shore Babies' Hospital at Ropes Point, Salem, by the gifts from the "Discretionary Fund" created by the will of the late Colonel David Lyman Jewell of Wollaston. Mr. Elmer A. Cowdrey of Peabody and Mr. C. B. Barton, Jr., of Brookline are the executors of the will. It is through the interest of Mr. Cowdrey that the North Shore Babies' Hospital is one of the beneficiaries of the will.

Through this fund the Nursery and office have been renovated and through Mr. Cowdrey's latest gift of $1000 the Formula Room, which is one of the most important departments in a modern hospital, has been completely tiled and refinished. The walls and floor are finished in very beautiful Zenithern tiling which is germ and rodent proof. The color scheme is not the usual dead white walls, but a lovely rose pink which harmonizes with the dark grey tiling of the floor. A new sanitary sink has been installed together with a new cabinet having built-in trays. A new formula table for the use of the Superintendent, and modern apparatus has also been purchased so that this room in the North Shore Babies' Hospital is in complete keeping with any of the best hospitals in the State.

The Formula Room after these extensive improvements and additions of apparatus is in keeping with the other improvements and additions which have been made possible for the Hospital through funds presented to the Hospital by Mr. Elmer A. Cowdrey from this estate.

Many babies suffer from having too much sugar, others have declined because of poor milk, a few children even being fed canned milk instead of the special fresh milk they should have, with the re-

sult that when they arrive at the hospital it takes the expert knowledge of doctors and nurses to restore them to health, and in this newly equipped Formula Room this problem will be solved.

SERIAL ROENTGENOGRAPHY AND THE EVOLUTION OF PULMONARY TUBERCULOSIS

PREPARED BY HOMER L. SAMPSON

To allude to the "film" as a "living pathology" may be an exaggeration, but stereoscopic films of the chest may rank as a means of studying living pathology. Before such a goal may be securely established, however, considerable standardization will be necessary. This short résumé describes a standardized technique that produces satisfactory results for the study of the evolution of pulmonary tuberculosis, together with a few remarks on the uses of such a method.

The x-ray "picture" is a most valuable aid in the diagnosis of pulmonary tuberculosis. The "film" also reveals a variety of shadow combinations in various phases of evolution that go hand in hand with the clinical course of the disease. It is desirable, therefore, that a method be evolved that will enable us correctly to register the various changes that are present in the lung or that may later take place. While the film reveals only shadows, these shadows portray an anatomical or a pathological condition existing in the chest. Yet, we are not to infer from this that the film reveals every anatomical or pathological change in the path of the ray; a small area of disease may be so located as to escape detection, due to the overlying denser tissues—anatomical or pathological. Nor is one always able to determine the character of the structure or outline of a given shadow. Experiments have shown that an object having geometric form may often be seen in a field, whereas one not having a definite shape or outline may be practically lost in the same field. Dr. Kennon Dunham has aptly used the aphorism, "shadows do not lie," but inexperience may make inferences faulty.

MANY ROADS LEAD TO ROME

There are many ways to obtain good films. The one important point is to be sure that the factors involved in the making of a film are as you suppose them to be. Also, it is not of so much importance that a film should be of an exact density as it is that one may be able to reproduce results that are within reasonable limits of density and comparable. The technique now in use at the Trudeau Sanatorium is as follows:

Eastman duplitized films—Eastman developer, 100 M. A. Coolidge Tube—Kelley-Koett Tube and Cassette shifter. Double Intensifying Screens. Snook Transformer. Distance 48 inches—milliamperes 100—time 1/15 second. Kilo voltage is variable for different chest depths.

A variety of opinions is held by many leading roentgenographers as to which technique produces the most satisfactory chest film. Two factors of considerable importance are the length of exposure and the tube film distance. With the ever-increasing power of x-ray machines and tube capacity, it is possible to cut the time down to 1/120 of a second with the possibility of this being shortened; but the question arises, is there any need of working faster than a speed that is sufficient to arrest satisfactorily the shadows of the moving parts, which can be done in many instances with 1/15 or 1/20 of a second?

SERIAL FILMS ARE VALUABLE

Serial films in the study of the progression or retrogression of the pulmonary disease are valuable. This does not apply alone to pulmonary tuberculosis; but as pulmonary tuberculosis is so often a chronic process, it is not strange that investigators wax enthusiastic when they find how often the progress of the disease can be followed and how frequently the various changes that take place in the lungs fit in so nicely with the clinical or symptomatic behavior of the patient. At the Trudeau Sanatorium for the past ten years, the evolution of pulmonary tuberculosis in upwards of 3,000 patients has been followed over the usual period of residence at the Sanatorium. In many instances, the serial work has been carried on for years after discharge from the institution.

Early infiltrations have been followed through the various intermediate steps or phases until apparently a complete resolution or, as is more often the case, organized fibrosis takes place months or years later. Many collateral inflammatory reactions or new foci, as the result of repeated exacerbations, have been seen to develop in the course of the disease. These also can be seen to resolve or progress as the case may be. While many early changes can be recorded on the stereographic films, it is not to be inferred that the film is capable of registering the earliest tubercle formation. However, through experimental work instituted by Dr. Lawrason Brown and carried on at the Trudeau Sanatorium, we were able to demonstrate roentgenographically tubercles in the lungs of rabbits fifteen days after inhalation of bacilli.

SHADOWS OF EARLY LESIONS

How long might the disease have existed before it registered on the films? There is no doubt but that the first proliferation of cells incident to the presence of bacilli might easily fail to register a sufficient shadow to be recognized. This condition may occasionally be inferred when râles develop in an area where before there were none and when subsequently shadows appear in the film at this site. Cavity formation has been observed from incipiency through the subsequent progressive stages until in some instances a whole lobe is excavated. In many of these cases, there is observed a zone of localized haziness surrounding the cavity wall.

Again may be observed the progression of cavity formation to the phase where it may cease to grow, followed by a slow or rapid dissolution of the so-called ring or annular shadow or area of rarefaction, until little or no trace is left of the previously present cavity.

Very recently, serial films of certain cases have been taken as often as twice a week. In such instances, where specific foci are being watched, it has been possible to record very small changes taking place from time to time. The progression or retrogression of small cavities can be measured almost in millimeters. Where only one limited field is being studied, small stereoscopic or single films, size 5 x 7 inches or 6½ x 8½ inches, can be utilized to great advantage.

In a patient manifesting definite symptoms, the physician is enabled often to direct his attention

to other organs when serial films exclude the lungs as being the seat of trouble.

The advantage of serial studies is evident only after rigid standards are followed and checked up with the clinical and laboratory data at hand. Then the study of the pulmonary disease offers many avenues of interesting and instructive investigation. —*Tuberculosis Abstracts.*

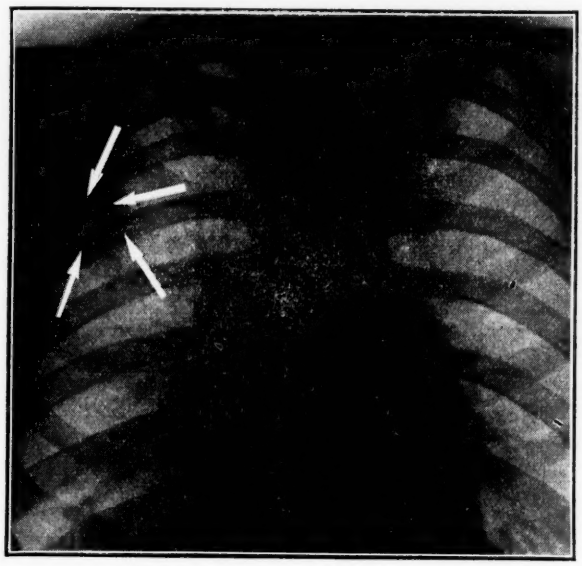

FIG. 1. Film taken prior to the administration of Tuberculin subcutaneously.

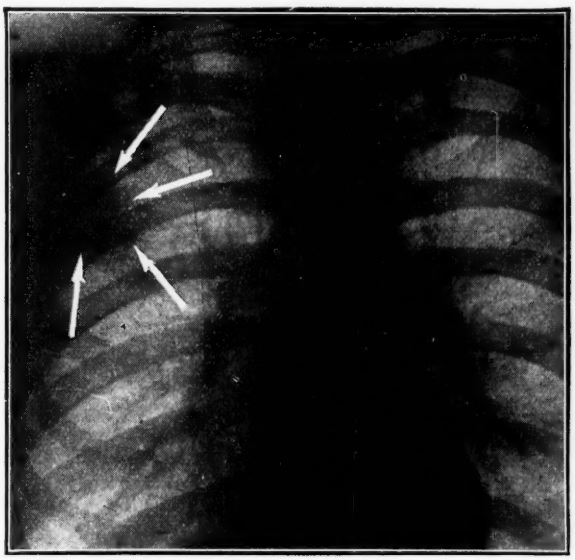

FIG. 2. Film taken during the height of Tuberculin reaction. Note increase of area of cloudiness.

ABSTRACT OF ADDRESS BY DR. PAUL POPENOE BEFORE THE MASSACHUSETTS PSYCHIATRIC SOCIETY, JUNE 28, 1929

California has been practicing eugenic sterilization in its state institutions since 1909, the total number of operations up to January 1, 1929 being 6,255. These are about equally divided between men and women; three-fourths were in the state psychopathic hospitals and one-fourth in the state institution for mental defectives. For some years past no mental defective has been paroled or discharged unless first sterilized. In the psychopathic hospitals, on the other hand, only about one first admission out of every 11 has been sterilized during the life of the law; and during recent years, when the administration of the law has been active, one first admission out of every five or six. While the operation is legally compulsory, it is the practice to get the written consent of the patient's nearest relatives, and this consent is rarely refused.

The workings of the law have been the subject of intensive study during the past 3½ years, under the direction of E. S. Gosney, a Pasadena philanthropist. No evidence has been found that either vasectomy or salpingectomy produces any other physiological effect than sterility. Psychological effects reported have been nearly all favorable; and of psychopathic patients questioned some years after sterilization and parole, six out of every seven approved of the operation, while none of the objectors gave any cogent or rational reason for objecting. Many of the patients, especially mentally deficient girls, marry after sterilization, and two-thirds of these marriages were reported as successful. The social workers and probation and parole officers of California were quoted as being almost unanimously satisfied with the law and its administration.

NUMBER OF DEATHS FROM AUTOMOBILE ACCIDENTS

The Department of Commerce announces that during the four weeks ending July 13, 1929, 78 large cities in the United States, reported 635 deaths from automobile accidents. This number (635) compares with 523 deaths during the four weeks ending July 14, 1928. Most of these deaths were the result of accidents which occurred within the corporate limits of the city, although some accidents occurred outside of the city limits.

For comparison, the number of deaths due to automobile accidents within city limits is desirable. Such figures are available for the four-week period ending July 13, 1929, and for the corresponding four-week period of 1928 for all of the 78 cities, the four-week figure in 1929 being 513 as contrasted with 435 for the corresponding four weeks in 1928.

Considering by four-week periods since May, 1925, total deaths from automobile accidents for 78 cities, regardless of place of accident, the lowest total (346) appears for the four-week period ending March 27, 1926, and the highest (771) for the four-week period ending Dec. 29, 1928.

THE MENINGITIS EPIDEMIC

Reports from State health departments indicate that the number of cases of epidemic meningitis is increasing. The outbreak in the United States was on the west coast and was introduced by Filipino emigrants and has been spreading eastward.

Michigan, New York City, Ohio, Illinois, Missouri, California and Pennsylvania have reported cases.

The preventive measures consist of the well-established rules covering personal hygiene.

Immunization is endorsed by some investigators. The serum can be secured from State Boards of Health.

REPORT OF THE FOURTH IMPERIAL SOCIAL HYGIENE CONGRESS

Some two hundred representatives of Dominion and Colonial Governments and of Mandated Territories were present at the Fourth Imperial Social Hygiene Congress which met at the Livingstone Hall, Westminster, London, on July 8 to 12, 1929.

There attended also delegates from Departments of the Home Government and public organizations interested in the subject. A welcome development was the presence of representatives from many of the larger local government authorities in Great Britain.

Organized by the British Social Hygiene Council, the members of the Congress were welcomed by the President, the Marquess of Linlithgow, K.T. In addition, Mr. Wedgwood Benn, M.P., the Secretary of State for India, Mr. A. A. Ponsonby, M. P., the Under Secretary for the Dominions, the High Commissioner for India, and representatives of the High Commissioners for Australia and New Zealand joined in greeting the delegates.

THE INTERNATIONAL SITUATION

The international situation with regard to venereal diseases was the subject to which the Congress first devoted its attention. Dame Rachel Crowdy of the Social Questions Section of the League of Nations explained the activities of the Advisory Committee in relation to Prostitution. The League only dealt with the problem in its international aspect. Signatures on behalf of twenty-two countries had already been appended to the protocol for the suppression of traffic in women and an expert inquiry had been conducted into the facts of the traffic in women in about thirty countries. The inquiries showed that out of forty-seven countries which had adopted the system of licensed houses twenty-eight had abolished it, and of the other nineteen, fourteen or fifteen had set up commissions of inquiry with a view to abolition. No one believed that prostitution could be abolished, but the League had recommended a number of steps which would lead to reduction. Closer coöperation between nations, particularly in the sharing of information in regard to such matters as the activities of bogus employment agencies, would help. The ages of marriage and consent should be raised throughout the world and there should be stricter punishment of men living on the immoral earnings of women. Finally, it was urgent that there should be much better moral and biological education for young people. With regard to the problem of actual infection, the parting of the ways had been reached, and nations must choose definitely between compulsory notification and treatment, and the voluntary method coupled with secrecy.

Representing the Health Section of the League of Nations, Sir George Buchanan explained in some detail the methods adopted for securing continuous treatment of infected seamen of the mercantile marine by means of personal cards which are carried by the sailor from port to port, and contain full particulars of diagnosis and treatment, thus securing to the sailor the opportunity for continuity of treatment. Colonel L. W. Harrison, the British expert delegate to the Health Organization, emphasized the difficulties of securing reliable standard tests of syphilitic infection.

Dealing with the work of the International Labour Office in Social Hygiene, Mr. H. B. Butler pointed out that the I. L. O. was only interested in health questions in so far as they were directly related to industry. He regarded the introduction of the personal card system for seamen as a great advance.

Considerable interest was aroused by a delegate from Scotland who urged the necessity for compulsory notification and treatment of the venereal diseases. Dr. E. B. Turner, on behalf of the British Social Hygiene Council, replied that public opinion in Great Britain was not yet sufficiently developed to justify the Council in pressing for legislation on the lines suggested. In any case, compulsion might in the present state of public opinion, undo much of the good work already achieved by voluntary methods.

Colonel L. W. Harnett, representing the Government of Bengal, informed the Conference that at the Port of Calcutta the recreational facilities for seamen were being extended and that in the Autumn a very fine new club would be opened which would include a V. D. treatment centre.

SOCIAL HYGIENE AND THE SERVICES

Afternoon Session on Monday, July 8th, Mr. E. B. Turner, F.R.C.S., in the Chair.

The session was opened by Surgeon Commander Rivaz who dealt with the subject in its relation to the Navy. The incidence of all forms of these diseases, he pointed out, was the lowest on record in 1914 and 1915. It increased during the later years of the War and after the Armistice. Since then, however, there had been a progressive drop each year, and the decline promised to continue as the result of the various preventive measures adopted in the Navy. These included amusements and recreative attractions provided aboard ship, and in the bigger ports, educational lectures and medical facilities.

Statistics relating to the efficiency of prophylactic treatment were given to illustrate the value of early disinfection. At the same time, Commander Rivaz emphasized the point that one of the chief causes for the decrease of disease in the Navy was the markedly diminished consumption of alcohol obtaining throughout the Service. He had ascertained that at one of our large shore establishments only 28 per cent. of the men drew their rum ration.

Squadron-Leader Starkey, representing the Air Ministry, in a brief statement on Venereal Disease in the Air Force, said that the temptation to which the Air Force was exposed was less than in the case of other Services, as the most desolate spots were always selected as Air Force Stations.

Admiral Sir Reginald Tupper, K. C. B., Chairman of the British Council for the Welfare of the Mercantile Marine, pointed out that the mercantile marine was in a quite different position from that occupied by a sailor in the Royal Navy. There could be no such supervision over the latter as there was over the former. The British Council for the Welfare of the Mercantile Marine with the British Social Hygiene Council was now taking definite and practical steps to promote and safeguard the health of the merchant seamen throughout the world. At the National Conference on the Health and Welfare of the British Merchant Navy at home and in ports overseas, which was held at the Royal United Service Institution in May last, resolutions furnishing a program for immediate adoption at home were passed unanimously. It was also agreed that committees should be constituted without delay in all the major ports of Great Britain.

By the co-öperation of the port and local authorities, and of the voluntary organizations concerned thus brought together, they would be able to link up the harbors and the towns and abolish the condition of segregation which was responsible for so much unhappiness and disaster in the lives of the seafaring population.

Dr. Ross, V. D. officer, City and Port of Liverpool, pointed out the different classes of merchant ships, from the Atlantic liner to small vessels engaged on short voyages in the coasting trade. Efficient treatment at sea reached its high-water mark in the liners engaged in the Far Eastern trade. Most of the patients at Liverpool came from the class of ocean-going tramps. The special conditions found in neglected cases came from this class. Most of this type of men had no sense of personal responsibility. Compulsion was the only real remedy for them. It would be of great assistance if all men signed on for a long voyage were examined for V. D. He did not believe that brothel regulation was any safeguard at all. One-third of the cases in Liverpool were of seamen infected abroad.

During the discussion which followed the papers, it was suggested that the inference to be drawn from Commander Rivaz's figures was that the incidence of disease depended upon the cleanliness of the civil population and that this was justification for the work of the local authorities in this country. Commander Rivaz was closely questioned as to the discharge of sailors to civil life who refused treatment and to the basis of his statistics relating to the value of early disinfection.

Professor Bostock Hill emphasized the difficulties which arose in dealing with the mercantile marine. Little was done on the voyage for the entertainments and instruction of crews. There was therefore a powerful temptation when port was reached. This was increased where there were no regulations to prevent the invasion of ships by undesirable persons whilst they were in ports. The remedy was the formation of committees who would organize and undertake the entertainment of crews during their leisure time on land.

CAMPAIGN AGAINST VENEREAL DISEASE

Morning Session on Tuesday, July 9, Professor A. Bostock Hill, Chairman of the Propaganda Committee of the British Social Hygiene Council in the Chair.

Dr. T. F. Dewar, Medical Officer, Scottish Board of Health, raised the question of compulsory treatment. The worst problem was that of the sufferers who, having commenced treatment, desisted and defied all attempts to persuade them to resume. The three outstanding problems of the future were: the patient who attended too late, the patient who desisted from treatment, and the doctor whose training in relation to V. D. was inadequate.

With regard to the position in Wales, Dr. T. W. Wade, Medical Officer, Welsh Board of Health, emphasized the fact that a high proportion of patients ceased attendance before being discharged or cured. Records showed, also, that very few patients found their way to centres of their own accord. Women, especially, must be sought out if they were to be brought under treatment.

Dealing with the steps taken to deal with the problem in Australia, Dr. C. L. Park, Chief Medical Officer, Australia House, insisted that compulsory treatment had not encouraged concealment and stated that 80 per cent. of defaulters resumed treatment under persuasion, no legal proceedings being necessary. Dr. Park also emphasized the need for better education in three respects: the education of medical students, the education of the general public by means of propaganda and the teaching of elementary physiology in schools.

The Hon. Herbert Greenfield, Agent in London of the Government of Alberta, read a paper prepared by the Social Hygiene Branch of the Alberta Department of Health, the Director of which explained that, in view of the predominantly rural nature of the Province, although well-equipped clinics were open to all sufferers free of charge, patients in remote parts were treated by their local doctors at the Government's expense until such time as they became non-infectious. A limited measure of compulsory treatment had been enforced against persons arrested on certain specified charges and found to be infected.

The subsequent discussion was almost entirely confined to pleas by Scottish delegates

that Scotland should be permitted to experiment with compulsory treatment, at any rate of known defaulters. Mrs. Neville Rolfe, after stating that the British Social Hygiene Council accepted the Trevethyn Report and would not oppose an experiment in an area where public opinion generally was favorable to compulsion, suggested that statistics led to the belief that greater continuity of treatment was secured under the voluntary system.

A delegation from Southern India urged the Conference to press for the compulsory circumcision of all male children soon after birth. War-time experience with a Mohammedan battalion, all of whom were circumcised, and a Hindu battalion, very few of whom were circumcised, seemed to indicate that the former kept very free from infection without being noticeably more moral than the latter.

On the question of the efficacy of the issuing of prophylactic packets in reducing the incidence of infection, Dr. W. G. Clark of Glasgow recounted the case of 1,000 men sent on leave from Scapa Flow with such packets, only three of whom became infected and those were too drunk to carry out the prophylaxis. Against this, however, Mrs. Rolfe urged the test carried out by the French Army Authorities which showed that the incidence of infection was reduced more rapidly by hygiene teaching alone, than by teaching combined with the issue of prophylactics.

At the Afternoon Session, after introductory remarks by Mr. L. S. Amery, M. P., the Congress resumed its study of progress reports and methods of treatment. The papers read and discussed related to widely separated portions of the British Empire, including New Zealand, British Guiana, Cyprus, Malta, Tanganyika and the Federated Malay States.

The Report from New Zealand stated that the knowledge that there was power to enforce treatment was a factor in persuading sufferers to continue until cured. There was evidence, however, that all practitioners did not notify all cases, as required by law, of patients ceasing to attend until discharged.

During the discussion on the papers, Colonel Harrison, (Ministry of Health) took the opportunity to rebut the opinion expressed in certain quarters that infected persons who evaded treatment were more likely to escape G. P. I. than those who submitted themselves to treatment. The result of a questionnaire circulated on an extensive scale showed that this view was without foundation.

CAMPAIGN AGAINST VENEREAL DISEASES

Morning Session of Wednesday, July 10, Mr. Somerville Hastings, M. P., in the Chair.

Colonel L. W. Harrison, Special Medical Officer for Venereal Disease, Ministry of Health, opened the subject of the attraction to treatment and the rendering non-infective of the infected population. He urged the necessity of so educating the public as to make the infected anxious to resort to treatment. Such education by means of propaganda had already had an important effect and more infected cases now came to treatment at the earliest possible moment. This was important from the point of view of economy as well as efficacy in effecting a cure. With regard to liaison between venereal disease and other public health services, Colonel Harrison suggested the provision of adequate treatment at maternity and child welfare centres for cases of infection discovered there. Turning to the V.D. centres, as such, he stressed the importance of V.D. officers being imbued with the public health ideal rather than with the "hospital out-patient attitude". It was important that there should be good relations between the V.D. officer and the local Medical Officer of Health. Attendances depended largely upon the personality of the V.D. officer and his staff.

Mr. S. B. Jones of St. Kitts, having missed his boat, was unable to read the paper appearing under his name, which was however read by the Chairman. The largest proportion of the infected population of St. Kitts, he said consists of agricultural laborers, domestic servants, porters and boatmen, descended from African slaves. The presence of Venereal Diseases among them was due to ignorance, low standards of living and bad environment. To attract them to treatment it was first of all necessary to explain to them the nature of these diseases, and how they affect their social life and wage-earning capacity. The campaign of enlightenment and treatment should be in the hands of a single physician who, by moral suasion at first, would urge the infected to persist in treatment until the non-infective stage is reached, but, failing this, notification and compulsory treatment would be enforced.

Dr. Henry Cluckman, Director, Johannesburg City Council Special Treatment Centre, pointed out the difficulty by reason of expense, of having separate clinics with full time medical staffs in small communities.

On behalf of the Birmingham Public Health Committee Councillor Miss H. Bartlett, informed the Conference that Birmingham had found that it was much easier to obtain attendance at ordinary hospitals, maternity centres, etc., than at special clinics. Mentally deficient and insane persons presented a special problem. In Birmingham tests were made for syphilitic infection upon every person admitted to an institution.

Dr. Marjorie Smith-Wilson read a paper on the position of the Social worker in the V.D. scheme. She urged the desirability of having a special social worker or almoner attached to each treatment centre for the purpose of examining the social background of the patient in such matters as the ability to pay train fares, the securing of affiliation orders or separation

from an infected husband or wife. There was also the question of the provision of hostels for residence during treatment and pending rehabilitation, and Dr. Smith-Wilson described some successful efforts in this direction. The important factor was that inmates should, as nearly as possible, enjoy a normal existence. Boys, in particular, were very poorly served in this respect.

Miss P. M. Lyall gave a brief account of the beginnings of Social Hygiene in Cyprus and explained that the somewhat primitive social conscience of the peasants made it necessary to inculcate a new social outlook by gradual means.

Miss M. E. Hillsdon of Birmingham stressed the importance of spiritual considerations in the propaganda of the B. S. H. C.

Mrs. Somerville of Edinburgh made a singularly moving appeal for the eradication of those social evils—overcrowding, etc.—which are the breeding ground of a low standard of health and behaviour.

THE POSITION IN INDIA

The Chair was taken at the afternoon Session by Sir Atul Chatterjee, High Commissioner for India.

Dr. A. B. Sousa, Assistant-Director of Public Health in the United Provinces, said that venereal disease was very prevalent in the Provinces. About 20 per cent. of the population was infected. On the other hand, there had been a big drop in the number of cases among British troops. Many municipalities were framing by-laws for the confinement of prostitutes in outlying quarters, and the United Provinces Government had passed legislation prohibiting girls from being brought up for immoral purposes among the Naik families. Another Bill was now before the Council making the prohibition general.

Colonel W. L. Harnett of Bengal stated that one of the most effective means of checking V. D. in Calcutta had been found to be the provision by employers of married quarters for labor from up-country districts so that men could bring their wives and families with them during temporary visits to work in the town. The great obstacle to effective propaganda was the illiteracy of 88% of the population. It was particularly necessary that the education of women should be pressed for. Until something was done in that respect there was little prospect of securing the spread of adequate hygiene teaching. At the last census only 1.8% of native women were literate.

The High Commissioner for India said that he thought that, with a general improvement in the Social conditions of India, knowledge of sex hygiene should not be difficult to spread because there was far less squeamishness there than in the West in discussing sexual problems.

General Hooton of the Government of Bombay told the Conference that thanks to the visit of a delegation from the B. S. H. C. led by Mrs. Neville Rolfe, special equipment for the treatment of V. D. had been incorporated in the new hospital constructed at Bombay. The crux of the whole problem in India was female education. Westerners must not judge India entirely, nor even largely, from Miss Mayo's books, which although based on facts, took no account of enlightened Indian opinion, and had made a large number of Indians very "touchy" about reform.

COST OF OPERATING A HOSPITAL FOR TUBERCULOSIS PATIENTS

The Fort Stanton, New Mexico, Hospital for tuberculosis patients maintained by the Public Health Service reports that the average cost of operations for the past five years has been $3.57 per patient day. This includes salaries, provisions, fuel, replacements, repairs and upkeep of buildings. The cost of food is 81 cents per patient day. More than 5,000 patients have been treated in this hospital in the past thirty years.

The results of treatment are about the same as those recorded in other well managed hospitals of this type, thereby showing that the dry climate of the Southwest is no more efficacious in its influence on the disease than the climate elsewhere.

The general opinion of specialists at the present time seems to be that regulated diet, nursing and medical supervision are the essentials in the care of tuberculosis patients and that climate plays a minor rôle.

WEEKLY HEALTH INDEX

Telegraphic returns to the U. S. Department of Commerce from 64 cities with a total population of thirty million for the week ending June 29, indicate a mortality rate of 11.0 as against 11.3 for the corresponding week of last year. The highest rate (24.2) appears for Memphis, Tenn., and the lowest (4.5) for Canton, Ohio. The highest infant mortality rate (161) appears for Nashville, Tenn., and the lowest for Kansas City, Kans., Somerville, Mass., and Waterbury, Conn., which reported no infant mortality.

Telegraphic returns from 64 cities with a total population of thirty million for the week ending July 20, indicate a mortality rate of 10.4 as against a rate of 11.1 for the corresponding week of last year. The highest rate (18.4) appears for Nashville, Tenn., and the lowest (5.1) for Somerville, Mass. The highest infant mortality rate (153) appears for Utica, N. Y., and the lowest for Des Moines, Iowa, and Duluth, Minn., which reported no infant mortality.

The annual rate for 64 cities is 14.1 for the twenty-nine weeks of 1929, as against a rate of 13.6 for the corresponding weeks of 1928.—*Bureau of Commerce.*

CORRESPONDENCE

STATE CEASES DISTRIBUTING SCARLET FEVER ANTITOXIN

Editor, NEW ENGLAND JOURNAL OF MEDICINE,

Dear Sir:

May we through your columns announce to the profession of Massachusetts that following a decision of the Scarlet Fever Committee we have today ceased distributing scarlet fever antitoxin.

The Department has for some time been negotiating with the Committee in regard to a contract under which this product could legally be distributed. Such negotiations are still open, and we hope that in the near future it may be possible to resume distribution. In the meantime, physicians desiring to use scarlet fever antitoxin may purchase the same from the local agents of the commercial biologic houses.

Yours truly,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

NEWS ITEM

APPOINTMENTS AT TUFTS COLLEGE MEDICAL SCHOOL

David Rapport, M. D. has been appointed Professor of Physiology at Tufts College Medical School and will enter upon his duties with the opening of the fall session.

Dr. Rapport was graduated from Harvard College in 1912 and from Harvard Medical School in 1916. During 1916 and 1917 he was Moseley Traveling Fellow from Harvard, working with Sir Thomas Lewis at the Hempstead Hospital, London, on the effort syndrome in soldiers.

Returning from London he interned at the Peter Bent Brigham Hospital; in 1920 he became Austin Teaching Fellow at Harvard, and the following year instructor in Physiology. The next two years were spent at Cornell University Medical School, working as Research Fellow on metabolism with Dr. Graham Lusk. From 1924 to the present time he has been Senior Instructor and Assistant Professor in Physiology at Western Reserve University Medical School.

Dr. Rapport has published various articles on circulation, endocrine glands and metabolism.

Edward M. Hodgkins, M.D., F.A.C.S. has been appointed Assistant Professor of Surgery for the coming year.

Dr. Hodgkins graduated from the University of Maine in 1910 and from Tufts College Medical School in 1915. For ten years he has been connected with the teaching staff as instructor in Clinical Surgery. He is Associate Professor of Surgery at Tufts College Dental School and is Surgeon-in-Chief of the Roxbury Hospital.

NOTICE

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

Senior Toxicologist, $4,600 to $5,200 a Year
Toxicologist, $3,800 to $4,400 a Year
Associate Toxicologist, $3,200 to $3,700 a Year.
Assistant Toxicologist, $2,600 to $3,100 a Year

Applications for the above-named positions must be on file with the Civil Service Commission at Washington, D. C., not later than August 28.

The examinations are to fill vacancies occurring in the Bureau of Chemistry and Soils, Department of Agriculture, and Bureau of Mines, Department of Commerce, for duty in Washington, D. C., or in the field; in the Chemical Warfare Service, War Department, for duty at Edgewood Arsenal, Md.; and vacancies occurring in positions requiring similar qualifications. At present there is a vacancy in the position of Toxicologist in the Bureau of Chemistry and Soils, Department of Agriculture, with headquarters in Washington, D. C., the duties of which require experience in organic and inorganic insecticides.

Associate Medical Officer
Assistant Medical Officer

Applications for associate and assistant medical officer must be on file with the Civil Service Commission at Washington, D. C., not later than December 30.

The examinations are to fill vacancies in hospitals of the Public Health Service, the Indian Service, and in other establishments of the Federal classified service throughout the United States.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

RECENT DEATHS

CARMALT—WILLIAM HENRY CARMALT died in New Haven, Conn., July 17, 1929 at the age of 93.

He was long regarded as the dean of the medical profession in that state and was a noted surgeon and Professor Emeritus of Surgery in the Yale Medical School. His influence in the development of the Yale Medical School led to the award of the degree of Doctor of Laws by Yale University this year.

Beginning as a lecturer early in his connection with the medical school his unusual ability led to the appointment of Professor of Surgery in 1881. This position was held until the appointment of Professor Emeritus was made in 1907.

He was born in Friendville, Pa., August 3, 1836. He graduated from the College of Physicians and Surgeons, New York in 1861; his preliminary education having been acquired in Pennsylvania, New Jersey and Virginia. After graduating in Medicine he studied abroad for several years paying especial attention to eye surgery. He had been a member of the American Surgical Association for forty-four

years and had served as its President and also its Secretary. He was the President of the Connecticut State Medical Society.

In 1922 an anonymous donor gave $100,000 to establish the William H. Carmalt professorship in the Yale Medical School.

Dr. Carmalt is survived by a son and two daughters.

WHITE—Dr. Arthur Joseph White, Superintendent of the Boston Sanatorium at Mattapan, died of heart disease at his home on the hospital grounds, July 24, 1929, at the age of 53.

Dr. White was a graduate of Boston College in the class of 1898 and of Harvard Medical School in 1904. He served as house officer and as executive assistant at the Boston City Hospital and then practised in Dorchester. In 1914 he was appointed superintendent at the sanatorium. He became a Fellow of the Massachusetts Medical Society in 1910. He is survived by his widow, Mrs. Alice C. McManus White, and by one son.

REPORT OF MEETING

MEETING OF THE ASSOCIATED BOARDS OF HEALTH OF SOUTH EASTERN MASSACHUSETTS

On Wednesday, July 17, at Osterville, some thirty members of the Associated Boards of Health of South Eastern Massachusetts gathered for the annual meeting. The business included the election of officers to serve the coming year, the choice being, President, G. Webster Hallett of Osterville; Vice-Presidents, J. B. Berry of Brewster and Charles R. Bassett of Yarmouth; Secretary-Treasurer, George F. Crocker Jr., of Marston's Mills, Barnstable; and Executive Board, W. G. Kirschbaum and Richard P. MacKnight of New Bedford and L. W. Russell of Dartmouth. Dr. MacKnight is State District health officer, Mr. Crocker is milk inspector for the county and the others are health officers in their respective towns. Mr. Hallett has been secretary of the association a dozen years and more.

Following the business, the morning session was devoted to a paper by Dr. Edward W. Burt of Westport, and in the afternoon there was a round table discussion of various matters of especial interest to health administrators. Dr. Burt emphasized the need of co-öperation in health matters. The fight against consumption has been successfully carried on by many bodies working together, and now cancer comes to consideration and will require the same method of procedure. He spoke especially of the need of concerted effort against arthritis. There are today more persons suffering from arthritis than from tuberculosis, and the difficulty must be met and subdued in the interests of the human race. "The wealth of the nation depends upon production," said Dr. Burt, "and when any one is sick, the production suffers, and there may be an added burden on the public treasury."

Arthritis is not new, for fossil bones give evidence of its existence in pre-historic times, and the oldest of medical writers make note of it in man. Those afflicted may suddenly be incapacitated. We do not know the cause, there are many conditions which seem to precede it, some of which may lead to a betterment if studied. There is need of organized procedure against it. Incidentally Dr. Burt objected to the term, "rheumatism" as being a relic of the mysterious origins of maladies of the Middle Age.

Dr. Burt touched upon a number of different topics in his address. He noted the progress in the care of tuberculates, formerly considered only from the point of view of consumption, but now including all forms. He spoke of caring for the young, including children even before they are born, watching them through school years, but later in life leaving the individuals to themselves in what is oftentimes a degenerative older age. "We must learn to give the adult more attention."

In conclusion the speaker briefly outlined the orthopaedic clinic which has recently been started in Falmouth, one of two in the smaller places in the state thus equipped, Quincy being the other.

In the afternoon a considerable number of health officials made up a sort of round table, with the presentation of various problems, on which light was shed from the experience of other officials. George T. Mercarta of Marston's Mills asked what can be done with a cellar bakery and with a store the debris from which is deposited in the rear on the ground. Hermann C. Lythgoe, of the State Board of Health, stated that the question of license for the bakery lies with the Board of Health, and this body had also the right to abate a nuisance. L. W. Russell of Dartmouth asked with reference to the collection of garbage from yachts in the harbor. He had two legal opinions one stating that the Board of Health has authority to expend money for this, another, that it has not, and a third lawyer declining to give an opinion.

Mr. Austin L. Pierce of Marion stated that he has a town appropriation for garbage collection from yachts in the harbor. Mr. W. G. Kirschbaum of New Bedford quoted a law against shoaling of navigable waters by discharges from vessels, and further stated that the old system of individual sewers discharging at the wharves made it necessary for his department to have the water front dredged from time to time. Mr. G. Webster Hallett of Barnstable expressed the opinion that local regulations must be made if such a matter were legally to be cared for by a board of health.

Dr. MacKnight, referring to vaccination, stated that in 221 cases of smallpox that had recently come under his observation, only two had been vaccinated, and these a good many years before. He stated the position of the Cape in the matter of the prevention of diphtheria, 32 towns in his southeastern district having adopted a definite program in the matter. Dr. C. W. Milliken, school physician of New Bedford, spoke of the splendid co-öperation on the part of the local board of health. He mentioned the suggestion to vaccinate the children in the summer and thus avoid sore arms at the beginning of the school year. He discussed also the life of a certificate of exemption to the requirement for vaccination. A single certificate formerly was presented year after year, but in New Bedford the change was made to the requirement of a certificate every term, with two school terms a year. The number of these certificates has decreased from about 1,000 to 275 the past year.

Dr. T. L. Swift of Falmouth outlined the orthopaedic clinics, conducted every Wednesday afternoon by Dr. Burt, with the co-öperation of the local nursing association, which are financed in part by the Rotary Club. Dr. E. L. Morris of Fall River spoke about trichinosis, of which three cases had recently been reported in his city. This is a matter that

in his opinion the boards of health can care for by inspection. In discussing the matter, Mr. Lythgoe pointed out the fact that the only safe measure of prevention is to cook the pork thoroughly, and practically all pork should be cooked. But by way of exception there are some commercial preparations, intended to be eaten raw, and these must have been in cold storage at a temperature below zero for at least six months.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

September 27-28—New England Surgical Society. Detailed notice appears on page 1227, issue of June 6.

October 7-19—New York Academy of Medicine. Detailed notice appears on page 468, issue of February 28.

November 4, 5, 6 and 7, 1929—Clinical Congress and Eighth Annual Meeting of the American College of Physical Therapy. See page 149, issue of July 18, for details.

December 2-6—The Radiological Society of North America. Complete notice appears on page 149, issue of July 18.

May 5-10, 1930—First International Congress on Mental Hygiene. See page 191, issue of July 25, for details.

DISTRICT MEDICAL SOCIETY

Norfolk District Medical Society

Schedule of meetings for the year 1929-1930. Invitations have been sent to the speakers and the list is true only on condition of their acceptance.

October 29—Medfield State Hospital, Harding, Massachusetts. Papers by the Staff.

November 25—Roxbury Masonic Temple. Dr. Roger Graves, "Urology from the Standpoint of the General Practitioner." Surgical discussion. Medical discussion.

January 27, 1930—Roxbury Masonic Temple. "Recent Advances in Diagnosis and Treatment of Syphilis." Speaker to be announced.

February 24, 1930—Roxbury Masonic Temple, 8:00. Dr. Edwin H. Place has been invited to read a paper and has been given carte blanche in the selection of his subject.

March 24, 1930—Roxbury Masonic Temple. Dr. Burton E. Hamilton. Subject to be announced.

May 6, 1930—Annual Meeting. Program to be announced.

The Censors meet for the examination of candidates, November 7, 1929, and May 1, 1930, in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, at 4:00 P. M. Applications must be in the hands of the Secretary at least one week previous to date of examination.

Owing to inability to engage the Roxbury Masonic Apartments on the last Tuesday of the month, such meetings as will be held in the Roxbury Temple will be held Monday evenings as per the dates above.

FRANK S. CRUICKSHANK,
Secretary, Norfolk District Medical Society.

BOOKS RECEIVED FOR REVIEW

The History of Hemostasis by Samuel C. Harvey. Published by Paul B. Hoeber, Inc. 128 Pages. Price $1.50.

Modern Methods of Feeding in Infancy and Childhood by Donald Paterson and J. Forest Smith. Published by Paul B. Hoeber, Inc. 149 Pages. Price $3.00.

The Art of Surgery by H. S. Souttar. Published by Paul B. Hoeber, Inc. 624 Pages. Price $12.00.

Your Nose, Throat and Ears by L. W. Oaks and H. G. Merrill. Published by D. Appleton and Company. 167 Pages. Price $1.50.

An Introduction to the Study of Physic by William Heberden. Published by Paul B. Hoeber, Inc. 159 Pages. Price $2.00.

Contributions to Psychiatry, Neurology and Sociology, dedicated to the late Sir Frederick Mott by his Colleagues, Friends and Former Pupils. Edited on behalf of the Mott Memorial Committee by J. R. Lord. Published by H. K. Lewis & Co., Ltd. 401 Pages. Price 21/ net. American market has been taken over by Paul B. Hoeber, Inc.

The Treatment of Fractures, by Lorenz Böhler. Authorized English Translation by M. E. Steinberg. Published by Wilhelm Maudrich. 185 Pages.

What Everyone Ought to Know (Health) by Oliver T. Osborne. Published by Charles C. Thomas. 313 Pages. Price $2.50.

A Manual of Proctology by T. Chittenden Hill. 3rd Edition. Published by Lea & Febiger. 272 Pages. Price $3.50.

Rickets including Osteomalacia and Tetany by Alfred F. Hess. Published by Lea & Febiger. 485 Pages. Price $5.50.

The Facts of Modern Medicine by Francis W. Palfrey. Published by D. Appleton and Company. 490 Pages. Price $5.00.

Tweedy's Practical Obstetrics. Edited and Largely re-written by Bethel Solomons. 6th Edition. Published by Oxford University Press. 759 Pages. Price $7.50.

The Robert Jones Birthday Volume—A Collection of Surgical Essays. Published by Oxford University Press. 434 Pages. Price $13.00.

Haemorrhoids—Their Actiology, Prophylaxis and Treatment by Means of Injections by Arthur S. Morley. 4th Edition. Published by Oxford University Press. 122 Pages. Price $2.00.

Diagnosis and Treatment of Deformities in Infancy and Early Childhood by M. F. Forrester-Brown. Published by Oxford University Press. 199 Pages. Price $4.15.

Diseases of the Larynx, Including Those of the Trachea, Large Bronchi and Oesophagus by Harold Barwell. 3rd Edition. Published by Oxford University Press. 278 Pages. Price $3.65.

The Cytoarchitectonics of the Human Cerebral Cortex by Constantin Von Economo. Translated by Dr. S. Parker. Published by Oxford University Press. 186 Pages. Price $6.25.

Oesophageal Obstruction, Its Pathology, Diagnosis and Treatment by A. Lawrence Abel. Published by Oxford University Press. 234 Pages. Price $9.00.

Nephritis, Its Problems and Treatment by T. Izod Bennett. Published by Oxford University Press. 94 Pages. Price $1.85.

Tuberculosis—Its Prevention and Home Treatment by H. Hyslop Thomson. 3rd Edition. Published by Oxford University Press. 96 Pages. Price $.75.

Diabetics by John Knowles Lund. Published by The Scientific Press, Faber & Faber Ltd. 87 Pages. Price 3/6 net.

The History of Nursing by James J. Walsh. Published by P. J. Kenedy & Sons. 293 Pages. $2.15 postpaid.

La Coxite Gonococcique by Marthe Lamy. Published by Gauthier-Villars et Cie, Editeurs. 250 Pages. 35 fr.